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TITLE OF THESIS: AN EXPLORATORY STUDY OF THE MULTIDIMENSIONAL

NATURE OF TEACHER-STUDENT VERBAL INTERACTION

IN SECOND LANGUAGE CLASSROOMS

DEGREE FOR WHICH THESIS WAS PRESENTED: Ph.D.

YEAR THIS DEGREE GRANTED   1976

THE UNIVERSITY OF ALBERTA

AN EXPLORATORY STUDY OF THE MULTIDIMENSIONAL NATURE OF

TEACHER-STUDENT VERBAL INTERACTION IN

SECOND LANGUAGE CLASSROOMS

by

(C)   NELLY ZURCHER McEWEN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF SECONDARY EDUCATION

EDMONTON, ALBERTA

FALL, 1976

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled, "An Exploratory Study of the Multidimensional Nature of Teacher-Student Verbal Interaction in Second Language Classrooms," submitted by Nelly Zurcher McEwen in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

ABSTRACT

This study was designed to examine the multidimensional nature of teacher-student verbal interaction in second language classrooms. Specifically, the major purposes were: 1) to develop an appropriate multidimensional category system for second language instruction, 2) to describe teacher-student verbal interaction by means of the observational instrument, and 3) to relate selected observationally-derived variables to measures of student aptitude, attitude, and achievement.

The L2 (Second Language) System which was developed as part of the study is based primarily on the work of Flanders and Taba, although it also draws upon the work of Brophy and Good, Gallagher, Bloom, and the field of applied linguistics. Included in the instrument are dimensions of VERBAL FUNCTIONS, CONTENT, and THOUGHT in which every teacher and student verbalization is categorized by means of a three-digit code, each number of which represents a category in each of the three dimensions. Individual students are identified by means of a standardized seating scheme which permits observational data to be treated statistically as frequency measures of individual verbalization. VERBAL FUNCTIONS and student identity are coded directly in the classroom while CONTENT and THOUGHT categories are added to the classification from the audiotapes recorded during the observational sessions.

Eight grade ten French 11 classes (N = 185), instructed by four teachers each of whom taught two classes using Voix et Images de France (Renard and Heinle, 1969), were coded by means of the L2

System for one-half hour daily over a period of one week while engaged in the transposition of the Sketch of Lesson 17. The identical procedure was employed for the Mechanism of Lesson 17. Forty hours of observational data were recorded. A battery of aptitude, attitude, and achievement instruments were administered to the students. The scores of the Modern Language Aptitude Test (Carroll and Sapon, 1959), selected scales from the National Test Battery (Gardner and Smythe, 1974), and the three Oral Production Tests (developed specifically for the study) were correlated with the observational data collected for the students.

The descriptive results indicated that classroom verbal interaction was essentially a succession of dyadic transactions between the teacher and individual students. While the role of the teacher was found to be pervasive in determining the nature and extent of individual student verbal participation, examination of the transactional patterns in each class indicated that the actual interactive episodes were determined largely by the specific verbalization emitted by the student to whom a solicitation was addressed. Individual students were not found to share a common educational experience with respect to their verbal participation and the kind and amount of teacher solicitation and reinforcement received.

The correlational results indicated that while aptitude was not related to observational variables to any marked extent, both attitude and achievement shared a positive relationship with selected observational variables. In particular, attitude and achievement

were significantly correlated with higher cognitive level student verbalization. The relatively few significant correlations between observationally-derived variables and student measures for all groups with the exception of one class and the aggregate sample provided some indication of the complexity of the teaching-learning process in second language classrooms.

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CHAPTER I

THE PROBLEM

INTRODUCTION

While the use of direct observation to study teaching and learning has proliferated over the past twenty years, the criticism directed toward the merit of such research continues to persist. Despite the diversity of the approaches taken toward the description and analysis of classroom instructional interaction, i.e., affective, cognitive, and procedural, the investigators of observational studies have been reproached for restricting themselves to describing teaching and training teachers in skills of undocumented value (Rosenshine and Furst, 1973, p. 162). The present study has addressed itself to discharging this reproof.

A descriptive-correlational-experimental loop has been postulated as an appropriate model to study the instructional process in the classroom. The paradigm contains the following elements:

1. Development of procedures for describing teaching in a quantitative manner.

2. Correlational studies in which the descriptive variables are related to measures of student growth.

3. Experimental studies in which the significant variables obtained in the correlational studies are tested in a more controlled situation (Rosenshine and Furst, 1973, p. 122).

The first two paradigmatic steps have served as the framework for the present study. Although the above model has provided the skeleton for the pursuit of the present research, certain explicit procedures were required to produce meaningful results. These included

1

confining the study to second language instruction and changing the analytical emphasis from the group to the individual learner.

A change in research design from the class to the individual as the unit of analysis appeared appropriate conceptually and statistically for the purposes of describing and evaluating the function of specific teacher behaviors in relation to student learning outcomes (Brophy and Good, 1969, p. 3). By identifying which student is talking, somewhat different aspects of the quantity and quality of teacher-student contact become amenable to study. Data for the entire class treated as a group may be obtained by combining all the individual student frequencies. Research studies in which individual student interaction data have been reported (Jackson and Lahaderne, 1967; Brophy and Good, 1969; Good, 1970; MacDonald, 1972; McEwen, 1976) suggest that students may not receive equal opportunity to participate in classroom verbal activities and that the teacher can manipulate the performance of individual students by his choice of patterns of solicitation and reinforcement.

NEED

Indispensable to any discussion of the instructional process in second language classrooms is an examination of observational instruments already in existence which may be appropriate to the aims of the study. Relatively few observational instruments have been developed specifically for second language instruction. Those which exist are based either on the affective Flanders (1970) system (Wragg, 1970; Moskowitz, 1971; Forbes, 1972) or are concerned with

describing specific instructional activities conducted in the second language classroom (Jarvis, 1968; Maurice, 1968; Gagnon, 1969; Nearhoof, 1969; Rothfarb, 1970). Each of these systems has used the class as the unit of analysis, thus assuming that the pattern of verbalization of each student in the class is the same as that of the total quantified student verbalization. Furthermore, the effect of the teacher on student verbalization is assumed to be the same for all individuals.

In addition to treating all students in a class as recipients of a common educational experience, unfounded in practice, the cited observational instruments developed for second language instruction do not reflect an integration of dimensions found in schedules designed for other instructional settings. Although affect and instructional activities appear to be important factors associated with learning, their consideration alone represents a somewhat simplistic view of teacher-student interaction.

The analysis of the available observational systems for second language instruction revealed that none was appropriate for the present study. Consequently, the first step in the study was to develop an observational instrument which would reflect the purposes of the research. The L2 (Second Language) System was developed specifically to provide some indication of the multidimensional nature of verbal interaction. Its primary goals are to preserve as much as possible the complexity of the teaching-learning process, and to provide a focus on the individual learner.

THE PROBLEM

This study was designed to examine the multidimensional nature

of teacher-student verbal interaction during instruction in second language classrooms in order to provide some indication of the complexity of the teaching-learning process.

PURPOSES

The three major purposes of the study were:

1) to develop an appropriate multidimensional category system specifically for second language instruction,

2) to describe teacher-student verbal interaction by means of the observational instrument, and

3) to relate selected observationally-derived variables to measures of student aptitude, attitude, and achievement.

ASSUMPTIONS

1. Verbal behavior is an adequate sample of total classroom behavior.

2. The verbal behavior of a teacher and his students observed during classroom visits represents an adequate sample of their usual interaction during transpositional activities.

3. The data collected reflect an accurate representation of the observed verbal behavior.

4. The majority of teacher-student verbal interactions are dyadic.

5. The teaching-learning process cannot adequately be described by means of any single factor.

6. Language aptitude can be measured by means of a standardized test.

7. Attitudes can be measured by a paper and pencil multiple choice questionnaire.

8. Achievement reflecting actual learning of material presented during the observational period can be measured by means of a criterion-referenced oral production test.

DEFINITION OF TERMS

1. <u>Interaction Analysis</u> - A method of coding spontaneous verbal communication, arranging the data into a useful display, and analyzing the results in order to study patterns of teaching and learning.

2. <u>L2 System</u> - A system of interaction analysis designed specifically for second language instruction which represents a synthesis of affective, cognitive, procedural, and content dimensions in which dyadic interactions between teacher and students and students and students are preserved and treated as frequency measures.

3. <u>Teacher Instructional Strategy</u> - Teacher verbal behaviors which interact with student verbal behaviors in a direct quantifiable manner.

3.1 <u>Solicitation</u>. Teacher acts which serve to elicit student verbalization.

3.2 <u>Reinforcement</u>. Teacher acts which react to student verbalization.

3.3 <u>Interaction</u>. The mutual or reciprocal action or influence occurring between the verbalization of class members.

4. <u>Student Criterion Measures</u> - Characteristics or traits on which judgments and decisions about students can be made.

4.1 <u>Aptitude</u>. A relatively invariant characteristic of an individual made up of skills and abilities not subject to easy modification by learning.

4.2 <u>Attitude</u>. A relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner.

4.3 <u>Achievement</u>. The ability of a student to demonstrate mastery of the material which he has learned during instructional activities.

5. <u>Voix et Images de France (VIF)</u> – An audio-visual method of second language instruction in which there is a constant interrelationship of the following elements: situation, context, semantic group, and global meaning, organized and functioning as a structure. Each of the thirty-two units of VIF consists of a "sketch" which presents an everyday situation and a "grammatical mechanism" which concentrates on and systematizes the points of grammatical structure presented in the Sketch. As both parts are taught in an identical manner, i.e., according to the four phases of presentation, explanation, repetition, and transposition, they really represent two units within the framework of a single lesson (Renard and Heinle, 1969, pp. 35-36).

6. <u>Transposition</u> – The final phase of a VIF unit in which the variable elements are manipulated in order to promote mastery of the structures. This phase consists of four interrelated steps:

    T1 a) recall of complete sentences
        b) roles assumed and dialogues "behaved"

    T2 a) manipulation of the variable elements
        b) oral description of selected pictures

T3 a) questions on the content of the "dialogue"
    b) résumé of the story

T4 a) students transpose lesson situation to their own
        lives by 1) direct questions
                 2) structured situations
    b) "behaves" a new but related situation (Renard
and Heinle, 1969, p. 57).

DESIGN

During the 1972-1973 academic year, the initial development of
the L2 System originated in a laboratory study in which the type and
amount of participation for each individual student was deemed to be
a source of information for teacher strategy development. The prelim-
inary L2 System, basically a modification of Flanders (1970), was
subsequently field-tested in a conventional classroom. In order to
identify additional aspects of instruction, three ten minute videotaped
microteaching episodes of second language teachers trained to use
Flanders System were transcribed and analyzed by means of the affective
Flanders and the cognitive and procedural Taba (1964) systems. On the
basis of this examination, dimensions of cognition and procedure were
added to the instrument. Furthermore, a content dimension was added
specific to second language instruction. The resultant multidimensional
L2 System was field-tested in the classrooms of four second language
teachers who were engaged in the use of different methods of instruction.
Once the coding procedures, interpretive issues, and observer reli-
abilities of the application of the observational instrument were
established, the L2 System and the design of the descriptive and corre-
lational aspects of the study were piloted in two French 11 classes
instructed by the same teacher.

Four high school teachers of Voix et Images de France (VIF) at the grade ten French 11 level volunteered to take part in the study during the fall of 1974. Each teacher had a minimum of five years of experience teaching VIF and had some previous knowledge of the Flanders system of interaction analysis associated with an earlier in-service training study. The teachers taught in three semesterized high schools in Edmonton, Alberta. Each teacher taught the Sketch and Mechanism of Lesson 17 of VIF to two classes of grade ten French 11 students. Each of the eight classes was observed for one-half hour daily over the period of one week while the classes were engaged in the transposition of the Sketch of Lesson 17. The identical observational procedure was followed while the students were involved in the transposition of the Mechanism of Lesson 17. A total of forty hours of observational data was gathered. While verbal functions and student identification were coded directly in the classroom, the content and thought categories were added from the analysis of the audiotapes recorded during the observational sessions.

Administered to all students in the study was a battery of aptitude, attitude, and achievement tests. The total scores of each were correlated with selected observational data collected for every student. The Modern Language Aptitude Test (Carroll and Sapon, 1959) and selected attitude scales from the National Test Battery (Gardner and Smythe, 1974) were administered to the students prior to the observational period. Three criterion-referenced oral production tests designed to test the material in Lesson 17 of VIF were developed specifically for the study. Two of the tests were statistically

parallel and were concerned with the material of the Sketch. One of these parallel forms was administered to the students prior to the introduction of the Sketch, while the other form was administered upon its completion. The third test pertained to the material of the Mechanism and was administered to the students upon completion of the unit.

DELIMITATIONS

1. Only teachers of Voix et Images de France (VIF) in semesterized high schools were observed.

2. All four teachers had some previous knowledge of Flanders System of Interaction Analysis.

3. All four teachers had a minimum of five years of experience teaching VIF.

4. Only grade ten classes of French 11 (the fourth year of VIF instruction in Alberta) were observed.

5. All eight classes were engaged in the transposition of the Sketch and Mechanism of Lesson 17.

6. The direct observational period extended from October to December, 1974 during which time all classes were observed.

LIMITATIONS

1. The presence of an observer in the classroom may cause atypical verbal interaction patterns.

2. Only eight classes taught by four teachers were involved in the study which is essentially exploratory in nature.

3. The data generated about teacher-student verbal interaction apply only to the oral transpositional phases of second language instruction. Generalizations about reading and writing skills and interaction during these activities are not warranted from this study.

4. The category and/or time interval for coding does not allow accurate generalizations about time deployment.

5. The incomplete achievement data due to missing tests for some students may distort actual achievement somewhat.

6. No adjustments in participation were made for students who were absent which may have affected some student verbalization distributions.

RESEARCH QUESTIONS

1. What is the distribution of the rate of instruction for each class during the Sketch and the Mechanism?

2. What is the distribution of teacher and student verbalization among the categories in the CONTENT dimension for each class during the Sketch and the Mechanism?

3. What is the distribution of teacher and student verbalization among the categories in the THOUGHT dimension for each class during the Sketch and the Mechanism?

4. What is the distribution of teacher and student verbalization among the categories in the VERBAL FUNCTION dimension for each class during the Sketch and the Mechanism?

5. What are the most frequent teacher solicitation strategies for each dimension during the Sketch and the Mechanism?

6. What are the most frequent teacher reinforcement strategies for each dimension during the Sketch and the Mechanism?

7. What relationships exist between student participation and teacher solicitation and reinforcement during the Sketch and the Mechanism?

8. What are the distributions by class of student aptitude, attitude, and achievement criterion measures?

9. What relationships exist between aptitude, attitude, and achievement criterion measures for each class during the Sketch and the Mechanism?

10. What relationships exist between the participation, solicitation, and reinforcement of selected CONTENT variables and aptitude, attitude, and achievement measures for each class during the Sketch and the Mechanism?

11. What relationships exist between the participation, solicitation, and reinforcement of selected THOUGHT variables and aptitude, attitude, and achievement measures for each class during the Sketch and the Mechanism?

12. What relationships exist between the participation, solicitation, and reinforcement of selected VERBAL FUNCTION variables and aptitude, attitude, and achievement measures for each class during the Sketch and the Mechanism?

OVERVIEW

This introductory chapter has presented the problem and the major purposes of the study. The essential terms have been defined

while the assumptions, delimitations, and limitations have been identi-
fied. Included as well, are the design of the study and the research
questions guiding the results.

The second chapter presents and examines the different dimensions
of observational instruments reflected by systems which have guided
the development of the L2 System. The methodological considerations
which govern observational research are also explored.

The third chapter outlines the development of the L2 System.
Included are the stages through which the instrument was expanded to
reflect the unique attributes of second language instruction while
borrowing from observational systems designed for other educational
settings. Furthermore, observer training and reliability procedures
are reported.

The fourth chapter presents the final version of the L2 System
with specific examples of each categorical classification. The coding
and analytical procedures associated with the instrument are outlined.
Data collected during the pilot study serve as examples of the types
of analysis employed in the study proper.

Chapter five presents the criterion measures of aptitude,
attitude, and achievement against which observational data were
correlated. Each test is described substantively and statistically.

Outlined in chapter six are the research procedures employed
in the study. The selection and description of the sample and the
data collection procedures are presented. The method of maintaining
observer and test marker reliability are subsequently reported.
Finally, the procedure required to prepare the data for analysis is

described.

Chapter seven presents the descriptive results of the study. Included are the temporal distributions of pace of instruction, percentage distributions of teacher and student verbalization among the categories of the dimensions of the L2 System, and the teacher instructional strategies and their relationship to student verbalization. Finally, the aptitude, attitude, and achievement measures are described.

Chapter eight presents the correlational results of the study. Intercorrelations among the aptitude, attitude, and achievement measures are reported in addition to the correlations between the criterion measures and the observationally-derived variables.

The final chapter summarizes the study. It also presents the conclusions and implications, and makes suggestions for further research.

CHAPTER II

RELATED LITERATURE

OVERVIEW

This chapter has two major purposes: to explore the different

types of observational instruments which could potentially contribute

to the development of the multidimensional observational system for

second language instruction, and to address itself to the methodological

issues associated with observational research. Included in the first

section are the affective, cognitive, and dyadic systems which

contributed to the second language instrument under development as

part of the present study. The second section reports the issues of

design, validity, reliability, and analytical procedures connected

with the development of observational instruments. A brief summary

concludes the chapter.

TYPES OF OBSERVATIONAL SYSTEMS

A significant trend in educational research has been to

withdraw from the study of characteristics of students and/or teachers

and to begin an analysis of the behavioral interaction of these

individuals in a class setting. Some representative systems that have

attempted to bring order and coherence out of the complex and multi-

variate environment of the classroom are noted by Gallagher (1970,

p. 34). These systems usually concentrate either on the affective or

cognitive dimension and have evolved from a variety of different

orientations. Sometimes these systems evolve from a concern for

logical thinking processes in the classroom as does the instrument

developed by Smith and Meux (1967); a concern for classroom performance

and curriculum development (Taba et al., 1964); or a concern for

teacher influence on the students (Flanders, 1965). Bellack et al.

(1966) derived his work from Wittgenstein's game theory to develop

his system. This section of the chapter examines those systems whose

differing approaches have in some way influenced the system developed

as part of the present study.

Affective

An affective category is one whose primary focus is on the

emotional component of the communication, i.e., it takes into account

some measures of the expression of feelings or the emotional overtones

of some behavior. There are two dimensions to affect: 1) the

support-reject dichotomy, and 2) the understanding versus judging

continuum (Simon and Boyer, 1974, pp. 11-15). The majority of

observational systems may be classified as having an affective

component (see Simon and Boyer, pp. 12-13).

Perhaps the best known affective system is that of Flanders

(1970, p. 34). Its major advantages are its ease of coding and

ease with which it can be modified for use by various investigators.

Like most other observational systems, it was designed for use in

a wide range of instructional settings. For a list of systems which

derive from Flanders, the reader is referred to Rosenshine and Furst

(1973, p. 143). For a summary of the projects undertaken by Flanders

using his system, the reader is referred to Table 1.

Table 1

Research Projects Completed by Flanders**

Project Number	Year Data Collected	Location	Number of Classes		Grade Level and Subject	Outcome Variable
			Observed	In Sample		
1	1955-1956	Minnesota	9	34	7th grade, 2 hour English-social studies core	Attitude
2	1957	New Zealand	10	33	Standard four, self-contained	Attitude
3*	1959-1960	Minnesota	16	38	8th grade, 1 hour mathematics	Attitude and achievement
4*	1959-1960	Minnesota	15	37	7th grade, 2 hour English-social studies core	Attitude and achievement
5*	1964-1965	Michigan	30	101	6th grade, self-contained	Attitude and achievement
6*	1965-1966	Michigan	16	72	4th grade, self-contained	Attitude and achievement
7*	1966-1967	Michigan	16	00	2nd grade, self-contained	Attitude and achievement

*Supported, in part, by a research contract with the U.S. Office of Education, Bureau of Research, The Department of Health, Education and Welfare.

**Flanders, 1970, p. 390.

It is noteworthy that both of the observational systems designed specifically for second language instruction which are reported in Simon and Boyer are based on Flanders. The Flint system developed by Moskowitz (Fourth Revision, 1972) has added categories specific to second language instruction while the system developed by Wragg (1970) has modified Flanders system simply by adding a dimension which distinguishes between the use of English and French. Another second language observational instrument derived from Flanders is that developed by Forbes (1972). Furthermore, the Flanders instrument has been used to collect observational data in second language studies (Moskowitz, 1968, 1970a; Quinn, 1971; McEwen, 1972; Gardner, 1973).

The Flanders system has been chosen to serve as the foundation for the observational category system under development in the present study for the following reasons:

1) the precedence of such an undertaking cited above;

2) its documented application in other second language studies;

3) the investigator's previous research which employed the instrument;

4) the collective work of Flanders represents an example of the descriptive-correlational-experimental loop which has also been selected as the design model of the present study.

Cognitive

Cognitive categories focus on the intellectual component of the communication. Cognitive models which have been used or are potential sources for different systems as listed by Simon and Boyer

(1974, pp. 21-27) include the following:

1) task analysis - Gagné (1970)

2) developmental - Piaget (Williams, 1969)

3) psychometric - Guilford (1967)

4) information processing - Miller, Galanter and Pribram (1960); Fletcher (1969)

5) taxonomy of cognitive objectives - Bloom (1956).

Systems which have been classified as primarily cognitive are those of Taba (1964), Aschner and Gallagher (1965), Bellack et al. (1966), Smith and Meux (1962, 1967), and Gallagher et al. (1966). For a description of these systems, the reader is referred to Simon and Boyer (1974). Some of these systems which use one or more of the above cognitive models as sources include the systems devised by Aschner and Gallagher (Guilford), Taba (Piaget), and Brown et al. (Bloom). Only those systems which have relevance to the present study are examined.

Particularly relevant to the present study is the work of Taba and her associates. Taba was concerned primarily with the development of effective curriculum strategies and their implementation. In a study designed to examine the effect of training on the development of thinking (Taba et al., 1964) it was found that the quality of the teaching strategy was the most significant single influence on the student's cognitive performance. Taba acknowledges the work of Aschner, Gallagher, Hughes, and Smith as the methodological predecessors of her study which included the development of an appropriate observational instrument. She also draws upon the work of Piaget (1953) and Bruner (1963) as parts of the development of thinking

skills. Methodological considerations postulated by Taba as necessary for the study of classroom thought processes which are also relevant for the present study include:

1) categories reflecting the complexity of thought in the classroom;

2) a method of coding which can reveal changes in the quality and level of cognitive functioning;

3) the concept of teaching and learning as a dynamic transaction between teachers and students requires a method of coding which permits an assessment of the impact of teaching acts and the nature of thinking expressed by the students;

4) a concern not only for the frequency of different types of teacher acts but with the combinations, sequences, and patterns of these acts, i.e., strategies;

5) in order to assess growth, provision is needed to assess the levels of thought both within and across the cognitive tasks . . . a multidimensional system of coding the source, the thought level, and the function (Taba et al., 1964, pp. 112-116).

Three advantages are stated for a multidimensional analysis:

a) to evaluate the impact of teacher behavior in terms of its productivity,

b) the study of the cumulative impact of certain patterns or combination of acts including their pacing,

c) examination of the effect of teaching strategies in terms of a measurable change in a specified outcome (Taba et al., 1964, p. 133).

To operationalize the above, twenty teachers at the grades two to six levels were provided with a ten day training period which consisted of the analysis of the structure and rationale of the Contra Costa County social studies curriculum and training in the teaching strategies for the development of the skills involved in the cognitive tasks (Taba et al., 1964, p. 58). The results of the study indicated

that there was generally a low relationship between the level of thinking and any of the traditional influential variables such as intelligence, achievement in social studies, reading comprehension, and social status. The most marked single influence on cognitive performance seemed to reside in the impact of the teaching strategies among which the nature of the questions asked seemed to play an especially important role.

In a follow-up study designed to examine the development of thinking processes under optimal conditions, twenty-four classes at the grades four to six levels were observed with the purpose of determining whether or not groups of students with a greater length of exposure to the curriculum and trained teachers would manifest higher levels of thought (Taba, 1966, pp. 64-65). Despite the pursuit of common generic strategies, considerable variation among teachers and classrooms was found. Variations of style and strategy were especially noticeable among the trained teachers.

The work of Taba and her associates served as another basis for the proposed multidimensional second language instrument. The Taba system was chosen specifically because of its:

1) emphasis on the cognitive and procedural aspects of classroom verbal interaction, and

2) the associated emphasis on teaching strategies.

By comparing second language instructional episodes by means of both the cognitive and procedural Taba system and the affective Flanders system, an appropriate observational instrument combining all three dimensions would be possible.

The Aschner-Gallagher System (1965) was developed from Guilford's model of the structure of the intellect (1956, 1959). The system was built around the operational dimensions of the Guilford system. The five primary categories developed were cognitive memory, convergent thinking, divergent thinking, evaluative thinking, and routine. The observational system was tested on twelve classes for five consecutive days each when one hour units were recorded in social studies, science and English. The 176 academically talented students who participated in the study were given a battery of cognitive and attitudinal tests the results of which were compared with classroom performance. The major results of the study are summarized below:

1. Cognitive memory questions made up 50 per cent or more of the questions asked by teachers in practically all sessions.

2. There were relatively few evaluative and divergent thinking questions asked, and in some class sessions they were entirely absent.

3. Teacher questions appeared to be the teacher's method of advancing class discussion, whereas teacher statements reflected the teacher's individual cognitive style.

4. A close relationship was noted between the type of teacher questions asked and the nature of the thought expression of the students. The style of verbal expression within the classroom was clearly determined by the teacher.

5. Teachers showed marked variation within their own pattern and these variations appeared to be due to (a) the group of students, (b) teacher's goals and (c) degree of class progress to those goals.

6. Student expressiveness in the classroom as an individual characteristic was consistent despite changes in subject matter, teacher and time.

7. There was a close correspondence between student performance in all categories of cognitive performance.

8. Boys generally appeared to be higher in classroom
    expressiveness than girls and showed more self-confidence
    in their own abilities. The girls were more positive
    toward the world around them (Gallagher, 1970, pp. 38-39).

Gallagher concluded that the findings confirmed previous observations as to the crucial role played by the teacher as the initiator and determiner of the kinds of thought processes expressed in the classroom. It was the teacher's questions that determined the focus of the classroom operation, and the style of question-asking determined the kind of thought operation that the student would be asked to perform. While the classification system used in the study appeared a useful first step, Gallagher felt that additional development in terms of larger units of measurement was needed to provide a satisfactory account of classroom strategy and interaction (Gallagher, 1970, p. 39).

The Aschner-Gallagher System is important to the present study primarily because it reflects the methodology used by Gallagher in his subsequent research. The Topic Classification System (TCS) (Gallagher et al., 1966) was developed out of the experience with the Aschner-Gallagher system described above. This system is a three-dimensional model with dimensions of instructional intent, conceptualization, and style. Coding is done from typescripts using a three digit code in which each digit represents a category number in each dimension. The system was used in three studies each of which attempted to control certain instructional variables.

In the first project, the typescripts from the Aschner-Gallagher study were recoded according to the TCS. In general, the major conclusion derived was that whoever controls the initiation and

termination of topics controls the classroom discussion or intellectual interchange (Gallagher, 1970, p. 86).

In the second project, the major purpose was to study the variations that might occur as a function of a particular content area. Thirty classroom sessions were videotaped over content areas of social studies, language arts, science, and general elementary school instruction. In the third project, teacher instructional strategies were compared when variables of subject matter, teacher background, student ability, and concept to be taught were held constant. Six biology teachers and their high ability students were the subjects while studying the Blue Version "Molecules to Man" of the BSCS curriculum. Each class was recorded for three consecutive days during discussion sessions while the teacher was introducing the subject of photosynthesis. Prior to the study, one day of practice was used to establish appropriate sound levels and also to acclimate the students to the presence of the equipment before actual recordings were taken. The length of each class session varied from one class to another.

The results of the three studies revealed that one of the strong and overriding impressions from the data was the complete teacher dominance or control over class discussions (Gallagher, 1970, p. 102), a result which closely parallels the findings of Bellack et al. (1966). In each of the three Gallagher studies, regardless of content field, the teachers controlled the introduction of topics, the completion of topics, and whatever summarizing or conclusions were presented. While the affective dimension of classroom interaction is a reflection of the basic relationship between teacher and students,

it is the cognitive dimension that provides the foreground of the instructional environment. Of the major areas of style, it was clear that the major emphasis in practically all classes, regardless of content field, was on description and explanation which provided the staple of class discussion. The ability to stimulate divergent thinking is something which appears to require cultivation if deemed a desirable instructional objective. In the dimension of instructional intent, significant teacher variation was noted in the tendency to use skills versus content topics.

Specifically, the work of Gallagher is important to the present study for the following reasons:

1) it provides further evidence concerning the need to examine the nature of cognitive interactions;

2) the three digit coding scheme in which classroom verbalization is classified according to the three dimensions simultaneously permits three-fold analysis;

3) confining the content to a specific unit of instruction can provide considerable experimental control;

4) the provision of an additional pool of categories for the proposed multidimensional observational instrument.

Dyadic

An additional component of classroom instruction which was deemed important in the present study is the value and extent of dyadic interaction. Brophy and Good developed an observational system which records interactions in a classroom between the teacher and

individual students. The student then becomes the unit of analysis. Studies undertaken using this system focus on intra-class individual differences as well as studies of communication of differential performance expectations by teachers (Brophy and Good, 1969, p. 1). A change in research design from the class to the individual student as the unit of analysis appears appropriate conceptually and more powerful statistically than group-based methods for purposes of description and evaluation of the function of specific teacher behaviors in relation to student learning outcomes (Brophy and Good, 1969, p. 3). By identifying which student is talking, somewhat different aspects of the quality and quantity of teacher-student contact become amenable to study. Data for the entire class treated as a group may be obtained by combining all the individual student codes.

Brophy and Good have used their system to study the differential effects of teacher strategy on their students. In a study using four grade one classes, in which four high achievers, four middle, and four low achievers (as identified by teacher rankings) were observed for two complete days for a total of ten hours of observation per classroom, response opportunities for the students were observed and recorded (Good, 1970). It was found that the high achievers received a greater number of opportunities to respond than did the low achievers with a probability ranging from 0.05 to 0.001 in the four classes.

In another study, (Brophy and Good, 1970), four classes were observed by two observers simultaneously, the one observing the six

highest achievers while the other observed the six lowest achievers as specified by the teacher for two complete mornings and two complete afternoons involving all class activities. It was found that children for whom the teachers held high expectations raised their hands more frequently and initiated more procedural and especially more work-related interactions than did children for whom the teachers held low expectations. Differences in quality rather than quantity of interactions between the high and low achieving students were found. Furthermore, teachers systematically treated the high achievers more favourably than the low achievers. The investigators also found direct evidence that the teachers' differential expectations for performance were being communicated to the students in their classroom behavior. Despite the fact that the high achieving students gave more correct answers and fewer incorrect answers than did the low achieving students, they were more frequently praised when correct and less frequently criticized when incorrect or unable to respond. Furthermore, the teachers were more persistent in eliciting responses from the high achievers than from the low achievers. It was also found that boys received more direct questions than girls and were praised more frequently when giving correct answers. Boys tended to have more interaction of all kinds with teachers than girls. Teachers appeared to be more evaluative in responding to boys and more objective in responding to girls (Brophy and Good, 1970, p. 369).

The results of the work of Brophy and Good are consistent with those reported by Jackson and Lahaderne (1967) who also found that sex makes a difference in teacher-pupil interactions in the

classroom. Four grade six classes were observed to determine
the communication between the teacher and the individual students.
An average of nine and one-half hours of observation was collected
in each classroom. All activities were sampled. Their findings
indicated that the quality of school life is based not only on
the pupil's sex and the class in which he is but also on what
he is like as a person. Within each classroom and each sex group,
there remained wide differences in the pattern of teacher-pupil
interactions. These differences were discernible only when the
descriptive unit is the individual student and his experience. The
important point made was that the results call into question the
conventional view of looking upon each classroom as a unit whose par-
ticipants share a common education experience (Jackson and Lahaderne,
1967, p. 211).

Further evidence that group and dyadic measures reflect
differences is provided by the work of MacDonald (1972). The major
purposes of the study were to determine the percentage of dyadic
and group interaction, to determine the variability of dyadic inter-
action, and to compare correlations between selected Flanders (1970)
variables and pupil achievement and attitude when group data and
individual data are used. The sample consisted of seven grade four
classes which were observed during all aspects of mathematics
instruction. Each class was observed for twenty hours over a
period of several months. At the end of that period, the students
were administered an achievement test in mathematics and an atti-
tudinal measure. The results revealed that considerable differ-
ences in verbal interaction existed both between and within classes.

When the total verbal interaction for each class was examined it was found that most of the verbal exchanges occurred between the teacher and individual students rather than between the teacher and the entire class. The results of the correlational aspect of the study revealed that large differences in the size and direction of the correlation coefficients existed when data were based on individual and group scores. MacDonald found little correspondence between the correlations in his study and those reported by Flanders (MacDonald, 1970, pp. 108-109).

In a second language study designed to examine student verbal behavior in some detail (McEwen, 1976)*, the nature and extent of individual student verbalization was monitored by means of a positional seating scheme which permitted the observational data to be treated as frequencies for individual students. One grade eleven French class of twenty-seven students was coded for approximately one-half hour daily for four consecutive days at times when students were engaged in oral work. The aggregate observational data were grouped by student sex and achievement as defined by the term French grade assigned by the classroom teacher.

The results of the study indicated that boys participated proportionately more extensively than did girls, high achievers verbalized more extensively than did low achievers, and that high and low achieving students produced different types of verbalization. Furthermore, the results indicated that the teacher reacted differ-

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*This study is described in detail in Chapter III, pp. 47 to 52.

ently to the verbalization of high and low achieving students –
high achievers received more praise and use of their ideas while
generally receiving proportionately more teacher feedback than
did low achievers.

The above studies which examined teacher-student dyadic
interaction in the classroom are particularly important to the
present study as they reflect a need to explore dyadic interaction.
Conceptually, using the individual student as the unit of analysis
appears appropriate for the purposes of describing and evaluating
the function of specific teacher behaviors with respect to student
learning outcomes.

The Multidimensional System

This section has examined some affective, cognitive, proced-
ural, and dyadic observational systems which appeared especially
relevant for the development of a multidimensionalized second
language observational instrument. For the reasons presented in
each subsection, the proposed second language observational instru-
ment would integrate the categories of the dimensions of each of
the category systems cited. Consequently, the second language
category system would tentatively include dimensions of affect,
cognition, and procedure, in which the individual teacher-student
dyadic contacts would be preserved. Chapter III present the stages
through which the instrument actually progressed before it reached
its final form.

METHODOLOGICAL ISSUES

In addition to the above examination of available ob-
servational instruments to serve as a potential source of appro-
priate categories and dimensions for the proposed second language
system, it was necessary to explore the methodological issues
associated with observational research. This section of the
chapter examines the issues of design, validity, reliability,
and analytical procedures. Each is examined in turn.

Design

During the past two decades the use of direct observation
to study the teaching-learning process in the classroom has in-
creased substantially. Numerous observational systems have been
developed specifically to describe instructional processes. The
latest edition of the recognized anthology of observational systems
(Simon and Boyer, 1974) contains ninety-nine such systems of
which seventy-eight have been designed expressly to describe in-
teraction in educational settings. While the anthology includes
only the best known observational instruments, many more are
readily available by consulting other sources. Despite the pro-
liferation of observational systems, research problems inherent
in teacher education still appear to be similar to those expressed
repeatedly during the last five to ten years. These include:

    a) research which focuses upon well-covered areas such as
        teacher training and teacher beliefs and neglects other
        areas such as teacher behavior and student outcomes or
        the methodology of research in this area;

b) the existing research is repetive but noncumulative. In the areas of teacher training and teacher beliefs in particular, there is little awareness of previous research. Usually the research is an attempt to repeat earlier results with another sample of teachers, or another subject area, or another skill;

c) there is a lack of integration of previous research;

d) lack of research to test competing or alternative hypotheses (Rosenshine and Martin, 1974, p. 11).

The use of observational systems to describe teaching and train teachers in skills whose value has been undocumented appears necessary but not sufficient to further the cause of such research (Rosenshine and Furst, 1973, p. 162).

Furthermore, the use of traditional psychological theory may be of little merit to observational research until the investigators of classroom behavior have themselves produced significant theoretical explanation of classroom events. Apparently a need exists for "the creation of new theory which arises directly from the grain and detail of the behavior it is intended to explain" (Nuthall, 1970, p. 27). Certain characteristics of classroom behavior which stand out as essential elements in any theory derived from this behavior include:

a) a theory of vicarious learning,

b) the place of student participation,

c) the importance of the pupil as an independent source of variation in class behavior, and

d) the dual role of the teacher's actions (Nuthall, 1970, p. 28).

As a result of the above concerns, a descriptive-correlational-experimental loop has been postulated as an effective design for the study of classroom behavior (Rosenshine and Furst, 1973, p. 123).

Conducting research studies in such a controlled manner "would have the potential to yield systematic information not only on the causes of student achievement but also on the contingent variations in classroom activities which can be expected when teacher behaviors have been varied" (Rosenshine and Furst, 1973, p. 124). It is the design rather than the particular results which deserves the most attention for research on teaching (Rosenshine and Furst, 1973, p. 125). Examples of research projects which have followed the descriptive-correlational-experimental paradigm include the Canterbury Research Project (Nuthall, 1971), and the work of Flanders (see Table 1, p. 16).

The first two steps of the descriptive-correlational-experimental loop have served as the design model for the present study. Once the observational instrument was developed, it would be submitted to an empirical test which would not only describe teacher-student verbal interaction by means of the system, but also provide some indication of the value of the description by correlating the descriptive observationally-derived data with appropriate student criterion measures.

Validity

Another fundamental issue of observational research is the type of validity reported for the instruments. Past definitions of validity have included that of Medley and Mitzel (1963, p. 250) that an observational system must provide an accurate record of behaviors which actually occurred in such a way that scores are reliable. Kerlinger considers the role of construct validity. "If

the variables being measured by the observational procedures are imbedded in a theoretical framework, then certain relations should exist" (Kerlinger, 1964, p. 507). Another means of determining validity is to compare one system with another. This has been undertaken in the past for the systems designed by Flanders and Medley (Medley and Hill, 1968) and for the work of Medley et al., Fuller, Brophy and Good, Spaulding, and Emmer and Albrecht (Emmer and Peck, 1972).

However, despite these approaches, the problem of validating teaching skills in terms of student outcomes remains (Rosenshine and Martin, 1974, p. 12). Rosenshine and his associates maintain that no matter how excellent the origins which are claimed for a category system, these systems cannot be validated only on the basis of their sources. Each system represents hypotheses that certain variables and certain ways of coding instructional transactions are related to student growth. Furthermore, every category system represents personal judgements about the unit of measure, the number of variables, the different behaviors included in any variable, the number of dimensions, and the recording scale to be used. Hypotheses with even the most prestigious of sources cannot substitute for generalizations developed empirically from experimental and correlational studies of student growth in a classroom setting (Rosenshine and Furst, 1973, p. 146).

While the multidimensional system under development in the present student may be considered to possess content and construct validity to a certain extent on the basis of the sources from which

it was derived, the concerns expressed by Rosenshine and his associates served to indicate the need to establish the instrument's concurrent validity with respect to selected student variables and learning outcomes. The student measures chosen to represent the specific criteria are reported and discussed in Chapter V.

Reliability

Another methodological issue concerns the reliability of the observations. The most common form of reliability reported in research studies is observer agreement (Mitchell, 1969). The methods of estimating the reliability of observer agreement include the use of different observers at different times, different observers at the same time, and the same observer at different times. The consistency of these measures gives some indication of the <u>objectivity</u> of the technique, the <u>consistency</u> of behavior from one time to another, and the <u>accuracy</u> of the measurements (Medley and Mitzel, 1963, pp. 253-254).

Another type of reliability is inter-investigation agreement which is concerned with the consistency of the categorization of classroom behaviors when different investigators employ the same observational instrument (Rosenshine and Furst, 1973, p. 168). A variation on this type of reliability concerns the consistency of using the same instrument by the same observers in two separate studies.

A third type of reliability is that of the representativeness

of the behaviors observed. In this type of reliability estimation,
the issue is not the number of times a classroom is observed, but
on the control exerted on the kinds of activities which are under-
taken at the time of observation   (Rosenshine and Furst, 1973,
p. 169).

While the present study has employed the most common method
associated with the estimation of reliability in observational
studies, i.e., observer agreement, it has also included the other
two types of reliability cited above. All types of observer agree-
ment, i.e., intra- and inter-observer agreement both at the same
and different times, have been estimated in the present study.
Furthermore, two estimates were used, the Scott coefficient (Flanders,
1966, p. 13) for continuous direct observation, and the Pearson
Product-Moment correlation coefficient for the estimates which ex-
cluded the time factor. The latter method provided an indication
of the accuracy of the coding with respect to each individual event.

In order to provide some evidence of inter-investigation
reliability, two complete units of observation were undertaken.
Moreover, to accommodate the concern for the representativeness of
the observed behaviors, only specific instructional activities were
included in the study. In this manner, all classrooms were involved
in similar instructional activities during observation which could
then be directly compared from one class to the next. Furthermore,
each teacher instructed the same two units to each of two classes.
This procedure provided some indication of the consistency of ob-
served instructional behavior not only over time but also between

classes for the same teacher. While the above procedure limited
the number of teachers in the study, the advantages with respect to
the issue of reliability were felt to outweigh the reduction in the
size of the teacher sample.

Analytical Procedures

One of the major problems in comparing the results from
different systems is that they are likely based on different
factors. Considerations which make comparisons between studies
difficult are differences in sample selection, subject content,
grade level, testing procedure, length of observation, and pro-
cedures for data collection (MacDonald, 1972, p. 117). These
problems stem from a difficulty in deciding what to measure.
Each researcher, depending on his particular theoretical frame-
work, views the problem differently. Instead of combining all
teacher criticism or all student talk into one variable, the hope
is expressed for studies which probe the relationships of many
types of teacher criticism to student growth, and many types of
student talk to student growth (Rosenshine and Furst, 1973, p. 161).

Nuthall criticizes the following analytical procedures:
(1970, p.23)

1) Observational procedures which result in a single measure
   such as the degree of teacher "indirectness" are
   probably too gross in their approach to show clear
   relationships with any measures of pupil growth.

2) If these procedures do measure a valid dimension of
   classroom behavior it is not likely one which is related
   in a single linear fashion to pupil achievement.

Another important consideration with respect to the
analysis of observational data is how results are reported.
Results not only for the group as a whole but also for indivi-
dual teachers (McEwen, 1972), and for individual students
(Brophy and Good, 1969, Jackson and Lahaderne, 1967; Good,
1970; MacDonald, McEwen, 1976) should be reported.

With respect to observational variables, it appears
necessary to cross-validate results from one study to the next.
Whether or not statistically significant results are obtained in
one study is not as important as whether the results are con-
sistent across a series of studies (Rosenshine and Furst, 1973,
p. 170).

Mitchell presents a set of criteria for a research
methodology in psychology that appears to have some potential
for advancing the field and contributing more efficiently in the
long run to the solution of critical educational and social pro-
blems. This methodology includes the following characteristics:

1) conceptualization of research problems "within the
    framework of person-environmental interaction systems";

2) conceptualization of research problems in multivariate
    terms that accurately reflect the complexity of both
    personological and environmental domains;

3) provision of adequate techniques for measuring initial
    environmental or situational variables that are at
    least as reliable, valid, and precise, as those
    techniques we now employ for measuring personological
    variables (Cronbach, 1957, p. 677);

4) provision of methods for defining and assessing person-environment relationships that are theoretically, logically, and operationally defensible;

5) application of multivariate statistical methods appropriate for analyzing the data derived from such a research setting. (Mitchell, 1969, p. 698).

Interaction analysis appears to meet the first criterion and part of the third. While the fourth criterion appears acceptable, alternative cause-effect, i.e., rather than indirect/direct, relationships of person-environment interactions should also be considered by researchers more extensively than they are at the present time. Interaction analysis is found to be inadequate with respect to the second criterion as its major constructs appear too limited in scope to represent fully the complexity of the classroom situation. Moreover, criterion five on occasion becomes too fixated at the rather simplistic "indirect-direct" conceptual level to take adequate advantage of the data that are available.

As a result of the analytical concerns presented above, the present study attempted to overcome the most obvious criticisms directed toward the pursuit of observational research. By developing an observational instrument which integrated the categories and dimensions of diverse systems based on differing theoretical frameworks, the present study could provide some indication of the complexity of classroom verbal interaction. Furthermore, the conceptualization of teacher and student verbalization as a sequence of dyadic interactions permitted considerable scope in the types of analytical procedures available for use in the present

study. Treating individual student verbal data as frequency measures permits analysis not only of individual teacher-student contacts, but also permits the data to be grouped and reported in the more traditional way in observational studies. Including not only two units of observation but also two classes for each teacher provides a means of cross-validating the results for individual classes over time in the present study.

Research Methodology

The methodological issues of design, validity, reliability, and the analytical procedures associated with observational studies have been examined in this section. The present study has attempted to surmount the criticisms which are generally directed toward interactive studies as much as possible.

While the limited size of the sample of the study precludes extensive generalization to other second language settings, the amount of control exerted over the design of the study should at least permit some tentative conclusions concerning the multidimensional nature of teacher-student verbal interaction. By concentrating primarily on the methodological aspects of observational research, the results of the study should be as valid and reliable as possible based on the criteria on which these judgements were made.

SUMMARY

This chapter has presented the different types of observational systems employed in the development of the multidimensionalized second language category system. While the actual develop-

ment of the system is presented in the next chapter, examination of the literature indicated that the instrument could profitably contain dimensions of affect, cognition, and procedure in which the dyadic contacts between the teacher and the individual students would be preserved.

The first two paradigmatic steps of the descriptive-correlational-experimental loop were chosen as the design model for the study in which the multidimensional observational system would be empirically tested. By correlating the observationally-derived data with selected student criterion measures, some indication of the validity of the observational instrument would be evident. The inclusion of different types of reliability estimates would further strengthen the research methodology used in the study. The multidimensional nature of the teacher-student verbal interaction described by means of the instrument which includes the individual student frequencies permits considerable scope in the type of analytical procedures possible.

CHAPTER III

DEVELOPMENT OF THE OBSERVATIONAL INSTRUMENT

OVERVIEW

This chapter presents the stages through which the multi-
dimensionalized second language observational instrument progressed
before it reached its final form. Reported in the first section is
the development of the preliminary version of the L2 (Second Language)
System which originated in a laboratory study. The second section
outlines the comparison of verbal interaction according to the Flanders
and Taba systems which resulted in the expansion of the initial
instrument. Presented next is the addition of the content dimension.
The observer training and reliability procedures are subsequently
reported including a description of the adjustments necessary to the
instrument as a result of its application. Concluding the chapter is
a brief summary of the stages of development of the observational
instrument.

THE PRELIMINARY L2 SYSTEM

Development

In an examination of the effect of training in interaction
analysis on the verbal classroom behavior of second language teachers
(McEwen, 1972), it was suggested that a further study be undertaken
which would additionally monitor the evolvement of teacher instruc-

tional strategies. Consequently, during the 1972-73 academic year, two fourth year undergraduate German majors at the University of Alberta enrolled in a special advanced modern languages methods course designed to assist them in the development of strategies in the teaching of German as a second language. The two students were train- ed in the Flanders system according to the program and procedures suggested for it (Amidon and Flanders, 1971) until they had assimi- lated the information and were competent in using the instrument. They were subsequently assigned to a group of four grade eight pupils to whom they taught Verstehen und Sprechen (Rehder et al., 1962). These four pupils were volunteers who had participated the previous year in a program which provided German majors in the undergraduate modern languages methods course with teaching experience in a con- trolled learning environment. The two fourth year German majors were among those who had participated in the earlier course.

Initially, the investigator coded the instructional verbal interaction. The student teachers practiced coding until they achieved a reliability rating which consistently attained a criter- ion level of 0.90 using Scott's Coefficient which was used to maintain inter- and intra-observer reliabilities for the remainder of the project (Flanders, 1966). One-hour classes in which each student teacher taught half of the lesson were held twice weekly over a five month period. While one student teacher taught, the other coded the verbal interaction. Weekly meetings were held be- tween the student teachers and the investigator in order to discuss the evolving teaching strategies.

As one objective of the strategies was the desire to increase
student verbal participation, additional student categories were
required to permit the desired analysis. The Flanders student
categories were modified as follows: student talk was divided into
two major areas labelled convergent (categories designated by 8)
and divergent (categories designated by 9) verbal behavior. Essen-
tially, convergent student talk allows the student little choice of
selection in his verbalization. He is expected to reply to a
specific question (category 8) or to ask a question which has been
specified by the teacher (category 8q). Divergent student talk
allows the student considerable freedom of choice in either answer-
ing a question or in making a self-initiated comment (category 9).
helping other students (category 9c), or asking an original question
(category 9q). Another category peculiar to second language in-
struction is the use of divergent talk in English (9e) which was
also incorporated into the system. Since the teacher categories
were felt to be appropriate they were left intact while Flanders'
category 10 was modified to include any non-verbal activity. The
revised observational instrument which was called the Preliminary
L2 (Second Language) System (L2P) consisted of six student cate-
gories, seven teacher categories, and one for non-verbal activity.
It is presented in Figure 1.

Since the identification of the type and amount of partici-
pation for each individual student was deemed to be an important
source of information for teacher strategy development, it was
necessary to code for both category type and student source. As

Teacher Talk	Indirect*	1. <u>Accepts feeling</u>. Accepts and clarifies an attitude or the feeling tone of a student in a nonthreatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included.
		2. <u>Praises or encourages</u>. Praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included.
		3. <u>Accepts or uses ideas of students</u>. Clarifying, building, or developing ideas suggested by a student. Teacher extensions of student ideas are included but as the teacher brings more of his ideas into play, shift to category 5.
		4. <u>Asks questions</u>. Asking a question about content or procedure, based on teacher ideas, with the intent that a student will answer.
	Direct*	5. <u>Lecturing</u>. Giving facts or opinions about content or procedure; expressing his own ideas, giving his own explanation, or citing an authority other than a student.
		6. <u>Giving directions</u>. Directions, commands, or orders to which a student is expected to comply.
		7. <u>Criticizing or justifying authority</u>. Statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
Student Talk	Convergent	**8. <u>Convergent answer</u>. Responding to the teacher about specific material he is learning or has learned. The student has little or no choice of answer as the response is predictable from the question asked.
		**8q. <u>Convergent question</u>. Asking a specific question as directed by the teacher.
	Divergent	**9. <u>Divergent answer or comment</u>. Responding to the teacher or initiating the communication; the student expresses his own ideas, opinions, reactions or feelings. He has considerable freedom of choice in his verbalization.
		9c. <u>Student-to-student assistance</u>. Assisting another student with his answer. The student has not been called upon to do so by the teacher; he does so of his own free will.
		**9q. <u>Divergent question</u>. Asking a question which the student initiates himself or for which he has the choice of selection.
		9e. <u>Comment in English</u>. Making a comment in English which is not necessarily relevant to the classroom activity. The comment may be disruptive.
		**10. <u>Non-verbal Activity</u>. Pauses, short periods of silence, and periods in which non-verbal activities occur.

* Flanders, 1970.
** Similar to Flanders, 1970, p. 141.

Figure 1

Preliminary L2 System

only four learners were involved, the first letter of their names
was used for identification. However, it was recognized that this
type of designation would not be applicable in a conventional class
of twenty-five or more students. A seating scheme was devised which
would identify individual members in a traditional classroom setting.
This is a two-digit positional scheme based on the seating arrange-
ment in the classroom. Each student is identified by his position
in the configuration of desks: the first digit represents the row
in which he is seated while the second digit represents his position
in the row. The advantage of this kind of identification scheme is
that an observer can walk into any second language classroom and
code the interaction on an individual student basis without first
having to learn their names. An illustration based on a fairly wide-
spread seating arrangement is presented in Figure 2.

This identification scheme may be used in conjunction with
the L2P categories in the following manner: If, for example, the
student in the upper left hand corner of the classroom answers an
open-ended question, the statement would be recorded as 9-11, the
9 indicating the type of response, and the 11 identifying the
student who made the response. A possible sequence of teacher-
student interaction follows:

    4

    8-21

    2

    6

FRONT OF CLASSROOM

11	12	13		14	15	16
21	22	23		24	25	26
31	32	33	CENTRE AISLE	34	35	36
41	42	43		44	45	46
51	52	53		54	55	56
61	62	63		64	65	66

BACK OF CLASSROOM
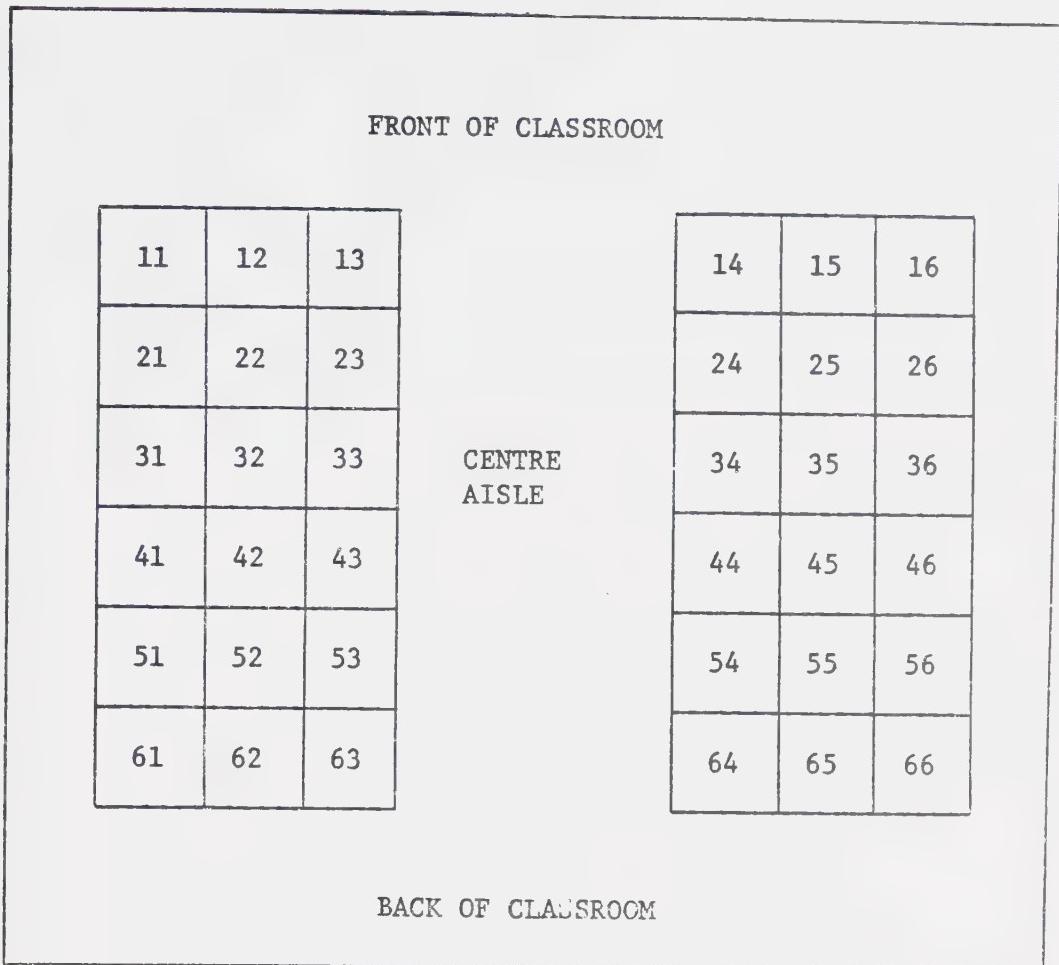
Figure 2

Individual Student Identification Scheme

8q-32

8-45

2

The above method of coding student verbalization permits three-fold data analysis: that of the total class as reported by Flanders, grouping students on selected variables, and reporting individual student differences. A conventional second language class was identified in order to explore relationships among these variables.

Field-Test

A grade eleven French 21 class of twenty-seven students was observed for the period of one week in the spring of 1973. During observation, the class was involved in the oral phases of lesson 23 in Voix et Images de France (VIF) according to the procedure outlined for its use (Renard and Heinle, 1969). VIF is a highly structured audio-visual method of teaching French as a second language wherein the student is frequently called upon to participate verbally. The use of English and choral response is actively discouraged by the methodology. During the observational sequence, explanation, repetition, and transposition were observed.

The first day of the week was used by the investigator to become acquainted with the classroom situation and the learning environment. The codes for that day were not used for analysis. The initial five minutes of each of the succeeding four days were used by the observer to establish the teacher's frame of reference for the activities to follow. Recorded observations ranged from

approximately twenty to thirty minutes each day, depending on how long the teacher conducted oral work. Reading and writing activities were not observed.

Results

The aggregate of the four observation instances is reported in order to present an overall picture of the classroom interaction. More comprehensive results are described elsewhere (McEwen, 1973a; 1976). Table 2 presents the per cent distribution of classroom interaction among the given categories. Teacher talk accounted for 41.3 per cent of the interaction, student talk for 50.2 per cent, and non-verbal activities for 8.5 per cent. No category 1 (feelings) behavior was produced by the teacher, signifying that in the classes observed he was not overtly concerned with verbalizations about student feelings. The two major evaluative categories, praise and criticism, accounted for 5.9 per cent and 2.6 per cent of the interaction, respectively. The remainder of teacher talk was distributed fairly evenly among the other four categories: use of student ideas (8.3 percent), questions (8.2 percent), information (8.3 per cent), and directions (8.0 per cent) indicating the teacher was primarily concerned with the content aspect of classroom verbal interaction.

Considerable variation in the distribution of student talk among the various categories was observed. Convergent response included eighteen instances of choral response representing 3.5 per cent of all category 8 verbalization and 1.8 per cent of total student talk. This very low incidence of choral response suggests that considerable dyadic interaction can occur in classrooms under the VIF

Table 2

Per Cent Distribution of Interaction Among Preliminary L2 Categories

DESCRIPTION	TEACHER TALK							STUDENT TALK						NON-VERBAL
	INDIRECT				DIRECT			CONVERGENT		DIVERGENT				
	Feelings	Praise	Use of Ideas	Questions	Information	Directions	Criticism	Answer	Question	Answer	Assistance	Question	English Comment	
CATEGORY	1	2	3	4	5	6	7	8	8q	9	9c	9q	9e	10
PER CENT	0.0	5.9	8.3	8.2	8.3	8.0	2.6	25.5	1.0	14.2	3.5	4.1	1.9	8.5
TOTAL	41.3							50.2						8.5

method of instruction. Student questions, both convergent and divergent, usually reflect teacher-directed verbalization. The observed teacher solicited more divergent questions than convergent questions (4.1 per cent vs. 1.0 percent) from the students. While students did assist one another (3.5 per cent), they made little use of English (1.9 per cent). Presented in Table 3 is the frequency matrix for individual student verbalization over the four observation occasions revealing the diversity in the type and amount of student verbal participation.

While the results of the field-test suggested that the L2P provided useful in-depth information about the nature and extent of teacher-student dyadic verbal interaction in a conventional setting, certain inadequacies in descriptive power were found to exist. The L2P did not specify the cognitive level of verbalization nor did it examine the actual content under investigation. Classroom management procedures appeared to be another aspect of instruction worthy of further inquiry. Refining the second language observational instrument to reflect these other dimensions was subsequently undertaken.

Unfortunately, the four observational sessions of the classroom field-test had not been audio- or video-taped precluding further substantive analysis of them. While second language interaction videotapes were readily available, none consistently provided identification of the individual students who verbalized. Since the L2P was essentially a modification of the Flanders system, the parent instrument was employed to continue the investigation.

Table 3

Aggregate Frequency Matrix for Individual Students

| STUDENT | CATEGORY | | | | | | TOTAL |
| | Convergent | | Divergent | | | | |
	8	8q	9	9c	9q	9e	
11	20	1	14	0	4	0	39
12	9	0	3	0	0	0	12
13	36	1	64	10	12	16	139
14	14	0	2	1	1	1	19
15	31	2	5	0	9	0	47
16	7	2	5	0	2	0	16
21	22	0	15	1	2	0	40
22	10	3	1	0	2	2	18
23	16	1	3	0	1	0	21
24	9	4	38	15	7	3	76
25	22	1	6	1	2	1	33
26	19	0	14	0	4	1	38
31	17	0	9	2	2	0	30
33	21	1	8	0	3	0	33
34	19	1	17	6	7	2	52
35	12	0	13	6	2	1	34
36	17	2	0	3	1	1	24
41	36	0	7	5	3	2	53
42	12	0	5	5	0	0	22
43	8	0	3	0	0	0	11
44	10	0	2	1	2	2	17
45	25	1	17	9	4	1	57
46	25	0	3	0	1	1	30
53	40	0	19	3	5	3	70
54	13	0	3	0	1	0	17
55	7	0	8	2	1	1	19
64	19	0	1	1	4	1	26
Total	496	20	285	71	82	39	993

Analyzing the verbal interaction between teachers and students in second language instructional settings by means of observational instruments which examined different dimensions would provide a basis for the expansion of the L2P. Consequently, verbal interaction classified according to the affective Flanders system was compared with the categorization of the identical verbalization according to the multidimensional Taba system.

COMPARISON OF THE FLANDERS AND TABA SYSTEMS

Description of the Systems

The Flanders System, described as an affective one-factor system (Rosenshine, 1970, p. 283) was presented in a somewhat modified form as the L2P in Figure 1. A major advantage of the Flanders instrument is its ease of coding which is done "live" in the classroom. An observer, who sits unobtrusively at the back of the classroom, decides which of the ten categories best represents the communication event and writes down its number while he continues to assess the interaction. Category numbers are enumerated every time the behavior changes or at three second intervals, should a particular categorization persist.

The Taba System, presented in Figure 3, has been classified as containing dimensions of affect, cognition, and procedure (Simon and Boyer, 1974, p. 626). Coding is done by "thought units" defined as "a remark or series of remarks which express a more or less complete idea, serve a specified function, and can be classified by a level of thought" (Taba, 1966, p. 134). This type of coding necessitates that the verbal communication be audiotaped and then

Source

> TG   Teacher Gives
> TS   Teacher Seeks
> CG   Child Gives
> CS   Child Seeks

Thought Levels (Any of these can take functions)

> 0   Incorrect information
> 1   Specific items of data
> 2   Relating, comparing, contrasting items of data
>   2.1   Grouping
>   2.2   Labeling
>   2.3   Recognizing multiple classification
> 3   Factual explanation, or factual support of prediction
> 4   Inference from units of data or from groupings and
>   categorization; predictions
> 5   Inferential explanation, inferential (logical) support
>   of prediction
> 6   Generalization from inferences

Functions

> *A   Agreement or approval
> Cl   Clarification
> *CM   Classroom management - discipline (teacher only)
> *D   Disagreement or disapproval
> *DM   Discussion management
> *Ir   Irrelevant
> R   Reiteration of immediately preceding thought unit
> R+   Reiteration of thought unit given earlier in the
>   discussion
> Sp   Extension of thought unit directed toward more specificity
>   at the same or lower level; "Give me an example."
> Sum   Teacher summarizes more than one thought unit
> X   Extension of thought unit at same or higher level

*Do not take thought levels

Figure 3

A Summary of the Categories of the Taba System*

*Simon and Boyer, 1974, p. 627.

transcribed. Verbal transactions are scored by three different codes: identification of source, pedagogical function, and thought level. Pedagogical functions are distinguished by two types: managerial functions which are procedural and accompanied by identification source only, and thought-related or substantive functions which are related to generating thought and therefore involve both identification of source and level of thought (Taba, 1966, pp. 135-138). Functions classified as managerial include agreement or approval, classroom management, disagreement or disapproval, discussion management, and irrelevant verbalization.

While the Flanders system served as the original basis for the development of the proposed second language observational instrument, the additional dimensions included in the Taba system could provide greater specification about the classroom verbal interaction. Analyzing selected segments of instruction by means of both systems and comparing the results appeared to be a useful way to abrogate the perceived inadequacies of the L2P.

Procedure

Three ten-minute videotaped microteaching episodes* of experienced French teachers attempting to control their teaching behavior

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*These three episodes represent a portion of the videotapes recorded in the summer of 1972 at Temple University in Philadelphia. The videotapes were produced as part of a graduate level course in training second language teachers in interaction analysis instructed by Gertrude Moskowitz. The Temple Tapes were dubbed for the investigator who took part in the course. Permission to report the results of the analysis of the selected microteaching materials was obtained from the three teachers and Temple University by Dr. Moskowitz. The investigator received consent from all parties concerned to use and cite the materials and results of the analysis.

in a way which each perceived as desirable after having received training in interaction analysis (Moskowitz, 1968, pp. 230-232) were transcribed and analyzed according to the Flanders and Taba systems (McEwen, 1973b). These three episodes were chosen specifically because they represented a variety of instructional activities usually found in second language classrooms. Since the three teachers represented different methodological backgrounds, the effect of a specific "method" was considered minimal. In order to approximate the classroom situation as much as possible, each teacher interacted with five female high school students.

It was recognized that the interactive sequences may be atypical of normal classroom operations. However, the training in interaction analysis which the teachers received led to the expectation that they might produce a greater variety of behaviors than teachers who had not received similar instruction. This advantage, along with their availability, made the episodes attractive as a basis for the further expansion of the observational instrument under development.

Each videotaped instructional episode was divided into Flanders' time units, i.e., a category and/or three second interval. The segments were then coded separately by means of both systems. Flanders matrices employing the same procedure and time interval were plotted for the information recorded by each system. The episodes were then recoded according to the Taba procedure, i.e., by "thought units" for different speakers. The two systems were compared, each system using its own recording procedure. Thus,

the Taba data reflected in the Taba matrix provide some indication
of time, whereas the comparison of the two systems each in its ori-
ginal mode of enumeration does not.

Results

The comparison of the Flanders and Taba systems is divided
into two sections: the first one presents the results for teachers
while the second presents the results for the students.

Teacher Talk. Table 4 presents the comparison of teacher
verbalization categorized according to the Flanders and Taba systems.
As no Flanders category 7 (criticism) behavior occurred, it has been
eliminated from the table. The data have been classified according
to the Taba thought units. Some teacher behaviors which occurred
were not classifiable by means of the Taba categories. Consequently,
the investigator added a category labelled unclassifiable.

Behaviors classified according to Flanders category 1
(feelings) generally had no equivalents in the Taba system. In
four instances the feelings were categorized as irrelevant while in
three instances the teacher clarified some feelings exhibited by
the students in the classroom. Although the Taba system purports
to be an affective system, it does not appear to have any categories
specific to this dimension. Flanders category 2 (praise) identified
entirely as "teacher gives", was classified as approval (59.6 per
cent), reiteration (19.3 per cent), approval-reiteration (12.8 per
cent) and irrelevant verbalization (8.3 per cent) by the Taba system.
F3 (use of ideas) was categorized primarily as extension (46.5 per

Table 4

Comparison of Flanders' and Taba's Teacher Talk Categories

Taba Categories SOURCE		Feelings TG	Feelings TS	Praise TG	Praise TS	Use of Ideas TG	Use of Ideas TS	Questions TG	Questions TS	Information TG	Information TS	Directions TG	Directions TS	Total N	Total %
Functions	A			65		1			6					72	16.7
	CM									4	1	50		55	12.7
	D						1			1				2	.5
	DM	1							1	24		9	5	40	9.2
	IR	4		9						2				15	3.5
	AR			14		1								15	3.5
Functions and Thought	R 1			18		3	2							23	5.3
	2			3		1								4	.9
	3					3								3	.7
	4					2								2	.5
	5					1								1	.2
	Sp 1						1		5					6	1.4
	2								1					1	.2
	3													--	--
	4								1					1	.2
	5									1				1	.2
	Sum 1													--	--
	2													--	--
	3													--	--
	4					1								1	.2
	5													--	--
	X 1					1	5		5				6	17	3.9
	2					1	2			2				5	1.2
	3						1							1	.2
	4					2	4		3					9	2.1
	5					4			2					6	1.4
	Cl 1	2	1						2	6				11	2.5
	2					1			3	3				7	1.6
	3					1				11				12	2.8
	4					2				1				3	.7
	5													--	--
	6									1				1	.2
Thought	1		1						26	33				60	13.9
	2								16	9		1		26	6.0
	3								2	2				4	.9
	4								16	1				17	3.9
	5					1			1	1				3	.7
	6					1			1	1				2	.4
Unclassifiable		6							1					7	1.6
TOTAL	N	13	2	109	--	27	16	--	91	103	1	60	11	433	
	%	3.0	.5	25.2	--	6.2	3.7	--	21.0	23.8	.2	13.9	2.5	99.8	99.9

cent), reiteration (27.9 per cent), and clarification (9.3 per

cent). Extension was divided between "teacher gives" and "teacher

seeks" (40.0 vs. 60.0 per cent) indicating that this classifica-

tion served a dual purpose with respect to student verbalization.

F4 (questions) was accounted for entirely by the "teacher seeks"

source. While several representations in the Taba system were

found for this category, the majority of the questions were re-

lated to thought alone, especially levels 1 and 2 (68.9 per cent).

F5 (information) was distributed among Taba thought levels (45.6

per cent), managerial functions (31.1 per cent), and clarification

(21.4 per cent). Teachers provided students with considerable in-

formation, particularly at thought levels 1 and 2 (89.4 per cent).

F6 (directions) accounted for almost all classroom management

verbalization (90.9 per cent) as well as discussion management

(35.9 per cent). Although some directions were requests (teacher

seeks), the effect on the student was the same as for commands--

the student was given an order with which to comply.

Comparing teacher verbalization by the two observational

instruments indicated that the Taba gives/seeks distinction was

essentially redundant with respect to the Flanders categories since

use of ideas and directions were really the only classifications

which retained the distinction to any marked extent. However, it

appeared that teacher verbalization could be described in greater

detail if some of the categories from the two systems were amal-

gamated based on their joint occurrence. Flanders teacher cate-

gories and Taba substantive and managerial functions were subse-

quently combined under the rubric of <u>verbal functions</u> in which the Flanders numeric description was expanded to reflect the Taba qualification.

Since the verbalization of feelings occurred infrequently compared to other teacher categories, it remained a single entity. Praise appeared to be of two kinds: actual praise and verbatim repetition of a correct student response. Use of ideas was expanded to reflect reiteration, clarification, and extension of ideas. Questions were divided into three kinds based on the comparison. Some indication of simple and complex questions appeared necessary in addition to a categorization for those of a personal nature. Information was extended to include four variations: content, procedure, opinions, and correction. Directions and criticism were expanded to include both a behavioral and a verbal qualification. Although no criticism occurred in the episodes, research in other second language studies as well as different subject areas has provided ample evidence that it does occur in the classroom.

<u>Student Talk</u>. Table 5 presents the comparison of student verbalization categorized according to the Flanders and Taba systems. F8 (response) was classified primarily as incorrect information (6.2 per cent), thought levels 1 (55.7 per cent) and 2 (13.4 per cent), and agreement (18.5 per cent) indicating that the majority of responsive student talk is associated with either the lowest levels of thought or agreement with the teacher. F9 (initiation) was distributed among thought levels 1 to 5 indicating

Table 5

Comparison of Flanders' and Taba's Student Talk Categories

Taba Categories	SOURCE	Flanders Categories Response SG	SS	Initiation SG	SS	Total N	%
Functions	A	18		2		20	13.3
	D	2		1		3	2.0
	IR			3		3	2.0
Functions & Thought	Cl 1		1			1	.7
	2				1	1	.7
	X 1	2		4		6	4.0
Thought	0	6				6	4.0
	1	54	1	11		66	44.0
	2	13		9	1	23	15.3
	3	2		9		3	2.0
	4			13	1	14	9.3
	5			4		4	2.7
Total	N	97	2	48	3	150	
	%	64.7	1.3	32.0	2.0		100.0

that a greater variety of cognitive functioning is possible in the more self-directed type of student verbalization. Only five instances of student questioning occurred which was not unexpected given the rather atypical conditions of the videotaped episodes.

Expansion of the Preliminary L2 System

The comparison of teacher-student verbal interaction according to the Flanders and Taba systems indicated that considerable detail could be added to the L2P. The analysis was especially productive in describing additional attributes of teacher verbal behavior and demonstrating the need to qualify both teacher and student verbalization according to their procedural and cognitive functioning. Consequently, Flanders categories were combined with Taba functional categories to form a VERBAL FUNCTION dimension while the Taba cognitive classifications revealed the utility of a separate THOUGHT dimension. Each will be discussed in turn.

VERBAL FUNCTIONS. The comparative analysis indicated that the affective Flanders teacher categories could be expanded to include a functional component. The amended teacher categories whose numeric and substantive descriptors represent the synthesis are:

1. Acknowledgement of Feelings

2. Praise or Encouragement
2r. Repetitive Praise

3. Reiteration of a Student Idea
3c. Clarification of a Student Idea
3x. Extension of a Student Idea

4.   Convergent Question
4d. Divergent Question
4p. Personal Question

5.   Information
5b. Belief or Opinion
5c. Correction
5p. Procedure

6.   Verbal Direction
6b. Behavioral Direction

7.   Verbal Criticism
7b. Behavioral Criticism

While the analysis indicated that the original seven teacher categories could be increased to seventeen, no additional student categories were suggested. The VERBAL FUNCTION dimension, therefore, consisted of twenty-four categories: seventeen for the teacher, six for the students, and one for non-verbal activities.

THOUGHT. The classification of teacher and student verbalization according to the THOUGHT dimension in the Taba system provided some indication of the different levels of cognitive functioning which can occur in a classroom. Although the need to include this dimension in the observational instrument was derived from the Taba analysis, the specific cognitive categories chosen to represent it were taken from Bloom (1956) as this taxonomic classification appeared more appropriate than the Taba thought levels for second language instruction. Analysis, synthesis, and evaluation were collapsed into a category labelled "higher mental processes" as the data seemed to suggest that these kinds of mental activities are highly context-dependent and do not occur to the same extent as do the lower classifications. The four cognitive categories included, therefore, are

1. Knowledge

2. Comprehension

3. Application

4. Higher Mental Processes

All categories in the thought dimension are combined with both teacher and student VERBAL FUNCTIONS.

ADDITION OF THE CONTENT DIMENSION

While the evolving observational instrument now encompassed two dimensions with which to classify verbalization, it still did not indicate the actual content under instruction. Conceptually, it appeared quite difficult to categorize the level of thought independently of any actual substantive qualification. Since the majority of second language instruction is concerned primarily with the development of basic linguistic skills, such content classification was added as a further dimension. It was recognized that not all verbalization occurred only at the linguistic level, especially in more advanced classes. Consequently, a category labelled "discussion" was added. The specific categories of the CONTENT dimension are:

1. Phonology

2. Morphology

3. Syntax

4. Vocabulary

5. Discussion

The numeric order of the substantive categories reflects the hierarchical nature of language skills as does the sequence of the

cognitive categories. The ensuing classification of teacher and student verbalization is three-fold: level of thought, type of content, and functional nature. While teacher and student verbal function categories are discrete, thought and content categories do not change depending on the source of verbalization, i.e., teacher and student classifications of these categories are the same.

OBSERVER TRAINING AND RELIABILITY

The expanded observational instrument now contained separate dimensions of CONTENT, THOUGHT, and VERBAL FUNCTION. Embedded in the VERBAL FUNCTION dimension were classifications of affect, cognition, and procedure. The coding procedure which had been used in the original laboratory study and the subsequent field-test had indicated that it was possible to categorize VERBAL FUNCTIONS and to identify individual students. Since the amount of information to be processed with respect to any given lesson had increased substantially, it was necessary to determine the most efficient means of coding verbal interaction by means of the multidimension-alized instrument.

In January, 1974, the investigator and a qualified teacher of French with five years of teaching experience set out to develop coding expertise. (In discussions concerning observer training and reliability, the investigator will be referred to as the principal observer while the alternate will be called the second observer.) Initially, the second observer, who had no previous knowledge of interaction analysis was given commercially-available second language

training materials with which to practice classifying verbaliza-
tion (Moskowitz, 1970b). These materials are based on the Flanders
system and include a description and examples of the categories,
ground rules for coding, and audiotaped training materials. In
addition, three selected English language episodes (Flanders, 1970,
pp. 56-57) were used for practice.

Once the second observer had acquired some facility in
identifying the original Flanders categories, she collaborated
with the principal observer in using the expanded version of the
verbal functions. The materials employed in this portion of the
training included the five feedback audiotapes from the initial
interaction analysis training study (McEwen, 1972), the VIF method-
ological instruction videotape (Monod, 1969), and the Temple
videotape (Moskowitz, 1972), all of which contained French language
transactions between teachers and students. The second observer
verbally identified each category for the principal observer who
either assented or dissented with the classification. This pro-
cedure had been found to be a useful means of attaining observer
agreement since it permitted immediate discussion and correction
of categorical discrepancies.

After this initial stage of practice at correctly identi-
fying the categories of the VERBAL FUNCTION dimension, the actual
category and/or three second coding interval was added to the
training. When the tallying became relatively relaxed and spon-
taneous, reliability ratings between observers using Scott's
Coefficient (Flanders, 1966, p. 13) were taken. After approxi-

mately twenty hours of practice described above, inter- and intra-
observer reliabilities on audio- and videotaped materials ranged
from 0.75 to 0.90. At this point, the two observers went into
conventional classrooms to code "live".

Four teachers, who instructed different levels of Ecouter
et Parler (Côté, Levy, and O'Connor, 1970), Voix et Images de
France (Renard and Heinle, 1969), and Programmed French (Burroughs,
1971), granted permission to the investigator to enter their
classrooms in order to practice direct coding. In addition to
verbal functions, the identity of individual students was coded as
well. Inter-observer reliabilities ranged from 0.81 to 0.90 on
verbal functions and 0.64 to 0.89 on student identification. The
differences between observers were due largely to the rate of coding.
While the principal observer had considerable experience identifying
individuals and could easily code both category and student source
at the same time, the second observer initially found it difficult
to tally both simultaneously. Eventually, however, she also develop-
ed ease at concurrently classifying both source and category.

After approximately forty hours of practice using graphic,
audio, video, and direct sources, coding competence had pro-
gressed sufficiently well to add the CONTENT and THOUGHT dimensions
to the verbal functions. Initially, typescripts were analyzed for
content and then thought levels. It quickly became apparent that
some adjustments to the categories of these two dimensions were
required in order to reflect accurately classroom communication.
Some verbalization appeared to be solely functional. For example,

if a teacher called upon a student by name only, no indication of
the content or thought asociated with the solicitation was evident.
Similarly, praise statements were often found to lack substantive
or cognitive qualification. Consequently, a _zero_ level for both
content and thought was added to the dimensions, respectively.
Furthermore, most second language programs contain specific dia-
logues which the students are expected to commit to memory. Although
it seems appropriate to classify this type of verbalization as
knowledge since mental functioning is required to learn the sentences,
no specific category in the CONTENT dimension adequately described
its substance. Therefore, another category labelled _commentary_ was
added to the CONTENT dimension. The number of categories of these
two dimensions was subsequently found to be sufficient to classify
the verbal interaction in second language classrooms.

When the two observers felt that they had established some
proficiency at coding all three dimensions simultaneously, they
attempted to use this procedure with the audiotapes. Timed multiple
coding was found to be considerably more onerous than classifying
typescripts. After approximately twenty hours of such concurrent
coding, an attempt was made to classify all dimensions as well as
the student source at the same time in the classrooms. As long as
the instructional procedures remained fairly rigid, i.e., primarily
manipulative, coding progressed smoothly. However, when the sub-
stantive or cognitive manifestation could not readily be identified,
it became impossible to code accurately even if a longer time inter-
val was employed. All observed sessions were audiotaped in this part

of the training. When it became apparent that it was impossible
to classify all dimensions directly, the procedure was abandoned.
In its place, verbal functions and student identification continued
to be coded directly, while content and thought were later added
to the classification from the audiotapes recorded during the obser-
vation. These audiotapes were then replayed and analyzed as often
as necessary to reach agreement on category classification.

Inter-observer reliability improved substantially when a
stop watch was used in conjunction with the audiotaped record.
While timing was not always accurate during direct observation, it
was possible to increase the precision by means of the stop watch.
Furthermore, the use of audiotapes permitted verification of verbal
functions and student identity. Scott Coefficients on content
ranged from 0.68 to 0.96 and on thought from 0.85 to 0.99 when this
procedure was employed.

After a total of approximately eighty hours of practice using
graphic, audio, video, and direct sources, observer reliability was
examined using fifteen minute audiotaped segments of instruction.
The transactional sequences were accurately timed, and Pearson Pro-
duct-Moment Correlation Coefficients calculated on them. Each
observer was allowed as much time as necessary to code each segment
until it was felt that the classification was as accurate as possible.
It was found that after the many hours of practice, agreement of
verbal functions was almost perfect, especially when the audiotapes
were used. Table 6 presents the Pearson Product-Moment Correlation
Coefficients on each dimension of the instrument for the three

Table 6

Pearson Product-Moment Correlation Coefficients of Observer
Reliability on each Dimension of the L2 System

Check	Observer	CONTENT	THOUGHT	VERBAL FUNCTIONS	Total
One	Intra 1	.97	.96	1.00	.99
(N=298)	2	.95	.91	.99	.99
	Inter	.95	.92	1.00	.99
Two	Intra 1	.96	.98	.99	.99
(N=295)	2	.98	1.00	.99	.99
	Inter	.97	.99	.99	.99
Three	Intra 1	.98	.99	1.00	.99
(N=300)	2	.97	.96	.99	.99
	Inter	.97	.97	.99	.99

reliability tests. The number of tallies on which each check was based is included in the table. The results of the analysis indicated that it was possible to apply the multidimensional instrument according to the procedure outlined above.

SUMMARY

This chapter has presented the development of the multi-dimensional instrument for second language instruction. The original laboratory study and its subsequent field-test indicated that it was possible to expand the description of student verbalization as well as to identify the student who produced it. Comparing selected video-taped microteaching episodes by means of the Flanders and Taba systems provided a basis for refining the instrument to reflect procedure and cognition in addition to affect. Ratiocination suggested specifying the actual content under instruction. The expanded system now contained dimensions of CONTENT, THOUGHT, and VERBAL FUNCTION. Classroom application of the instrument was subsequently undertaken in order to determine whether or not it was feasible to use it. The observer training program indicated that some categorical adjustments were necessary in order to reflect the communication in the classrooms. The reliability coefficients which were computed suggested that after extensive training it was possible to accurately describe classroom verbal interaction by means of the instrument. The multidimensional L2 (Second Language) System is described in the next chapter.

CHAPTER IV

THE L2 SYSTEM

OVERVIEW

While the preceding chapter presented a fairly detailed
account of the phases through which the L2 System was developed,
this chapter examines the observational instrument itself. The first
section presents a description and examples of every category of
each separate dimension. The second section exposes the coding
procedure used to classify the classroom verbal interaction. A
final section describes the analytical procedures associated
with the instrument by using the data of the pilot study.

CATEGORICAL DESCRIPTION AND EXAMPLES

The L2 System consists of three dimensions each of which
describes some aspect of classroom verbal interaction in second
language instructional settings. While all categories in each
of the substantive, cognitive, and functional dimensions are dis-
crete, they are capable of being theoretically combined with every
category of the other two dimensions. The CONTENT dimension con-
tains seven categories, the THOUGHT dimension five categories,
and the VERBAL FUNCTION dimension twenty-four categories. One
category from each dimension is used to classify every event. Figure
4 presents a description and examples of every category in each

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CONTENT*

0. No discernible content The subject matter content of the communication is not apparent. Managerial functions such as calling upon a student by name only and unspecified praise tend to fall into this category.

    oui, non, encore, plus fort, pardon

1. Phonology Emphasizing the phonological aspects of the language such as sounds, stress, and intonation patterns.

    Elève: Le matin je me lève à huit heures.
    Professeur: Bravo pour ta prononciation.
    Elève: C'est la voiture [du] monsieur.
    Professeur: [dy] monsieur.

2. Morphology Varying one element at a time such as gender, person, number, tense, or agreement. The combination of morphemes to form words is the essential criterion required for this categorization.

    Professeur: C'est ton livre?
    Elève: Oui, c'est mon livre.
    Professeur: C'est une ou un usine?
    Elève: C'est une usine.

3. Syntax Grouping words to form phrases, clauses, or sentences. Word order, indirect discourse, and the variation of several elements simultaneously represent some common syntactic manipulations.

    Professeur: Qu'est-ce qu'il dit?
    Elève: Il dit qu'il déjeune à midi.
    Professeur: Monsieur Thibaut, vous déjeunerez à l'usine?
    Elève: Oui, j'y déjeunerai.

4. Vocabulary Establishing the lexical items of the language. Once the item has been acquired, the emphasis then normally shifts to the manipulation of elements specified as content categories 2 or 3.

    Professeur: Qu'est-ce que c'est?
    Elève: C'est un salon de thé.
    Professeur: Que fait Paul à midi?
    Elève: Il déjeune.

5. Discussion Communicating is the focus of this category. The major emphasis is on the actual use of the language as a means of communication where the linguistic relationships are not emphasized. Causal relationships, descriptions, résumés, personal narrative, and oral compositions fall into this category.

    Professeur: Raconte-nous l'histoire!
    Elève: Eh bien, Madame Thibaut se lève très tôt le matin parce qu'elle a beaucoup
                 de choses à faire. D'abord. . . .
    Professeur: Qu'est-ce que tu feras cet été?
    Elève: Pendant le mois de juillet je resterai ici à Edmonton. Peut-être que je
                 travaillerai. Puis, en août, j'irai au Québec pour rendre visite à un bon
                 ami. Puis. . . .

6. Commentary Using the specific model sentences of a given instructional unit. No variation of the sentence is required, simply its recall.

    Professeur: Quel est le commentaire?
    Elève: Alors, Madame Thibaut, vous êtes seule.

THOUGHT*

0. No discernible thought The cognitive level of the communication is not apparent. Managerial functions such as calling on students by name only and unspecified praise tend to fall into this category.

    Bien, oui, non, plus fort, encore

1. Knowledge Recalling specifics, universals, methods, procedures, patterns, structures, and settings. The process of remembering is the one which is emphasized. The manipulation of variable elements tends to fall into this category.

Figure 4

Description and Examples of the Categories of the L2 System

```
Professeur:  Qu'est-ce que c'est?
Elève:       C'est une usine.
Professeur:  Qu'est-ce que tu fais?
Elève:       Je vais à la poste.
```

2. <u>Comprehension</u> Comprehending, translating, interpreting, and extrapolating the communication. Definitions of words, giving alternative examples, causal relationships, and verification of understanding tend to fall into this category.

```
Professeur:  Qu'est-ce que c'est qu'un jour de congé payé?
Elève:       C'est un jour où on ne travaille pas, mais on est payé.
Professeur:  Donne-moi un exemple d'un jour de congé payé!
Elève:       Eh bien, c'est un jour de fête comme le premier mai par exemple.
```

3. <u>Application</u> Using general ideas, rules, procedures, or methods in concrete or particular situations. The application of what is known in response to personal questions and résumés tend to be included.

```
Professeur:  Qu'est-ce que tu fais d'habitude quand tu te lèves le matin?
Elève:       D'abord je fais ma toilette, puis je m'habille.  Ensuite je prends mon petit
             déjeuner avec ma mère et ma soeur.
Professeur:  Donne-nous un résumé de la journée de M. Thibaut.
Elève:       D'habitude M. Thibaut rentre à six heures et demie mais ce soir il est en retard
             à cause de la réunion à l'usine.  Les ingénieurs ont une réunion à la fin de
             chaque mois. . . .
```

4. <u>Higher Mental Processes</u> Analyzing, synthesizing, and evaluating. The emphasis in this category is the production of original language usage. Descriptions, personal narratives, evaluations, and opinions tend to fall into this category.

```
Professeur:  Décris cette image!
Elève:       Enfin c'est juillet et les grandes vacances sont arrivées!  Les Thibaut
             sont très contents.  Cet été ils ne vont pas chez leurs grands-parents
             comme d'habitude.  Cette année ils vont faire du camping. . . .
Professeur:  Que pensez-vous du rôle de la femme dans la société française?
Elève:       Je crois que son rôle est semblable à celui de la femme au Canada.  Elle
             travaille probablement hors de chez elle tandis qu'en même temps elle
             fait la cuisine et le ménage.
```

==

VERBAL FUNCTIONS*

Teacher Talk

1. <u>Acknowledgement of Feelings</u> Dealing with either positive or negative feelings displayed in the past, present, or future in a non-threatening manner. Feelings may be discussed, accepted, clarified or communicated.

--Je sais que c'est très difficile à comprendre.
--Tu as l'air épuisé. Tu es malade aujourd'hui?
--Je sais qu'il fait très chaud dans la salle de classe et que c'est très difficile de faire attention.

2. <u>Praise or Encouragement</u> Praising and encouraging student verbalization or behavior. Jokes which are not at the expense of anyone, uh hum, etc. are included.

--Très bien, excellent, bravo, etc.
--Ton idée est excellente.
--Tu parles comme un Français.

2r. <u>Repetitive Praise</u> Repeating verbatim the correct answer uttered by a student.

```
Elève:       C'est Jean qui parle.
Professeur:  C'est Jean qui parle.
```

3. <u>Reiteration of a Student Idea</u> Using, interpreting, or summarizing the ideas of a student or students. The ideas are rephrased by the teacher who may use indirect discourse, affirmation, or interrogation.

--Jean croit que c'est vrai. Et toi, Georges?
--Robert dit que la France est un beau pays.
--Selon vous, le contenu du livre est très interessant.

3c. <u>Clarification of a Student Idea</u> Asking for further clarification, probing for more information,

Figure 4 (Continued)

Description and Examples of the Categories of the L2 System

or trying to get the student to focus his idea. Teacher clarification of a student's comment or query is also included.

    —Peux-tu clarifier ton point de vue?
    —Qu'est-ce que tu veux dire par cela?
    —Il me semble que tu dis le contraire de ce que tu penses. Pourquoi penses-tu que c'est vrai?

3x. <u>Extension of a Student Idea</u> Getting the student to extend or develop his idea, to draw it out, to enlarge upon his verbalization. Teacher extension of an idea may also be included if it is within the context of the student's original idea.

    —Y a-t-il d'autres raisons?
    —Peux-tu développer cette idée?
    —Quelqu'un peut dire quelque chose de plus?

4. <u>Convergent Question</u> Asking a factual question about content or procedure with the intent that the student produce a specific, predetermined answer. It is the teacher who is the initiator of the question which is asked. The substance of the question remains within the framework of the instructional unit.

    —Qu'est-ce que c'est?
    —A quelle heure est-ce que M. Thibaut rentre d'habitude?
    —Qu'est-ce qu'il dit?

4d. <u>Divergent Question</u> Asking broad open questions which require the student to formulate his own ideas. The student has choice in his answer although the question precipitates teacher-formulated discussion. As the teacher makes use of the students' ideas in the discussion, move to categories 3, 3c, or 3x.

    —Quelles sont les origines des fêtes françaises?
    —Quelles sont les similarités et les différences entre les ouvriers canadiens et les ouvriers français?
    —Pourriez-vous m'indiquer quelques différences culturelles et linguistiques entre les Français de France et les Canadiens d'expression française?

4p. <u>Personal Question</u> Asking a student a question about his own personal experience. The student is expected to draw upon his own life as the basis for his answer.

    —A quelle heure est-ce que tu te lèves le matin?
    —Combien de frères et de soeurs as-tu?
    —Qu'est-ce que tu feras pendant les grandes vacances?

5. <u>Information</u> Giving information about content, culture, grammar, etc.

    —En français on dit 'vous' quand on parle à quelqu'un qu'on ne connaît pas.
    —Pour bien parler il faut s'exercer à articuler clairement.
    —Le premier mai, c'est le jour de la fête du travail. Ce jour-là on donne des brins de muguet à ses meilleurs amis parce qu'on dit que cette fleur porte bonheur.

5b. <u>Belief or Opinion</u> Relating opinions, beliefs, or anecdotes to the students.

    —Je trouve que les élèves parlent mieux chaque année.
    —Le samedi après-midi, je vais toujours en ville pour faire mes courses.

5c. <u>Correction</u> Correcting an incorrect student answer. No value judgment is made about the answer as in verbal functions 2 or 7.

    Elève: Je par<u>lez</u> français.
    Professeur: Je par<u>le</u> français.
    Elève: Puis-je quitter <u>de la</u> salle?
    Professeur: quitter <u>la</u> salle.

5p. <u>Procedure</u> Presenting information about procedure. No student verbalization is anticipated. In order to elicit student verbalization, a category 4 or 6 is used.

    —Ce matin nous allons discuter ce qu'une femme française fait pendant la journée si elle ne travaille pas hors de chez elle.
    —Avant de partir, il faut que nous corrigions les exercices.
    —Demain, il y aura un examen. Alors, ce matin nous allons réviser ce que vous avez appris dans cette leçon.

6. <u>Verbal Direction</u> Giving directions, commands, or requests for verbal participation.

    —Répétez, s'il vous plaît!
    —Demande à Charles ce que c'est!
    —Raconte-nous ce que tu as fait hier soir!

Figure 4 (Continued)

Description and Examples of the Categories of the L2 System

6b. Behavioral Direction Giving directions, commands, or requests for behavioral participation.

> —Fermez vos livres!
> —Ecoutez bien le commentaire!
> —Allez au tableau noir!

7. Verbal Criticism Criticizing a student's answer.

> —Non, ce n'est pas juste.
> —Tu fais beaucoup trop de fautes!
> —Quel mauvais raisonnement!

7b. Behavioral Criticism Criticizing a student's behavior.

> —Assieds-toi et ne te lève plus pendant la classe!
> —Ton comportement dans cette classe est absolument inexcusable.
> —Tais-toi! Cesse de parler tout le temps!

Student Talk

8. Convergent Response Responding to the teacher about specific material the student is learning or has learned. He has little or no choice of verbalization since the answer is predictable from the question asked.

> Professeur: Qu'est-ce que c'est?
> Elève: C'est un atelier.
> Professeur: A quelle heure est-ce que la femme de ménage arrive?
> Elève: Elle arrive vers dix heures.
> Professeur: A quelle heure est-ce que tu déjeunes?
> Elève: Je déjeune à midi.

8q. Convergent Question Asking a specific question as directed by the teacher.

> Professeur: Demande à Judy ce que c'est!
> Elève: Judy, qu'est-ce que c'est?
> Professeur: Demande à Paul si l'usine est fermée le dimanche!
> Elève: Paul, est-ce que l'usine est fermée le dimanche?

9. Divergent Response or Comment Responding to the teacher or initiating the communication, the student expresses his own ideas, opinions, reactions or feelings. He has considerable freedom of choice in his verbalization.

> —Je pense qu'en Alberta on doit étudier le français.
> —Je voudrais bien partir parce que j'ai rendez-vous chez le dentiste dans une demi-heure.
> —Un jour quand je serai plus âgé, je voudrais aider les pauvres.

9q. Divergent Question Asking a question which the student initiates himself or for which he has the choice of selection.

> Professeur: Pose n'importe quelle question à Pierre!
> Elève: Pourquoi est-ce que M. Thibaut est resté à l'usine?
>
> Elève: Quelle est la différence entre pouvoir et vouloir?

9c. Student-to-student Assistance Assisting another student with his verbalization. The student has not been called upon to do so by the teacher; he does so of his own free will.

> Elève 1:   C'est un maison.
> Elève 2:   C'est une maison.
> Elève 1:   Oh oui, c'est une maison.
>
> Elève 3:   La raison pour cela est. . .
> Elève 4:   à cause de la fête du travail.
> Elève 3:   Oui, à cause de la fête du travail.

9e. Comment in English Making a comment in English which is not necessarily relevant to the classroom activity. The comment may be disruptive.

> —I think this is a drag.
> —Teacher, let me answer.
> —Hey Tom, what did you do last night?

---

10. Non-verbal Activity Pauses, short periods of silence, laughter, and periods in which non-verbal activities occur.

---

*One category from each dimension is used to classify every event.

Figure 4 (Continued)

Description and Examples of the Categories of the L2 System

dimension.

CODING PROCEDURE

While in the classroom, an observer codes both verbal functions and student identification. Every transaction which occurs is classified according to its descriptor. If a behavior persists beyond the three second timing interval a further code of the same category is enumerated. In periods of rapid verbal interchange, the observer concentrates on coding the identification of individual students if he is unable to classify everything simultaneously since the audiotape recorded during the observational session permits him to add the appropriate verbal function later if necessary. Once the audiotape has been recorded, it is possible to add the classification of content and thought to the verbal functions. Furthermore, the audiotape serves to confirm the accuracy and reliability of the verbal functions, student identification codes, and timing sequences.

The coding procedure of the L2 System involves, therefore, a combination of Flanders' (1970) event and/or three second interval, and Gallagher's (1970) three-digit numeric classification in which every number represents a category in each of the three dimensions. This three-way classification of each verbalization is represented in Figure 5 which demonstrates the inter-relationship of categories among the dimensions. Although all twenty-three teacher and student verbal functions are incorporated, only the generic equivalents are included in the figure in order to present a more
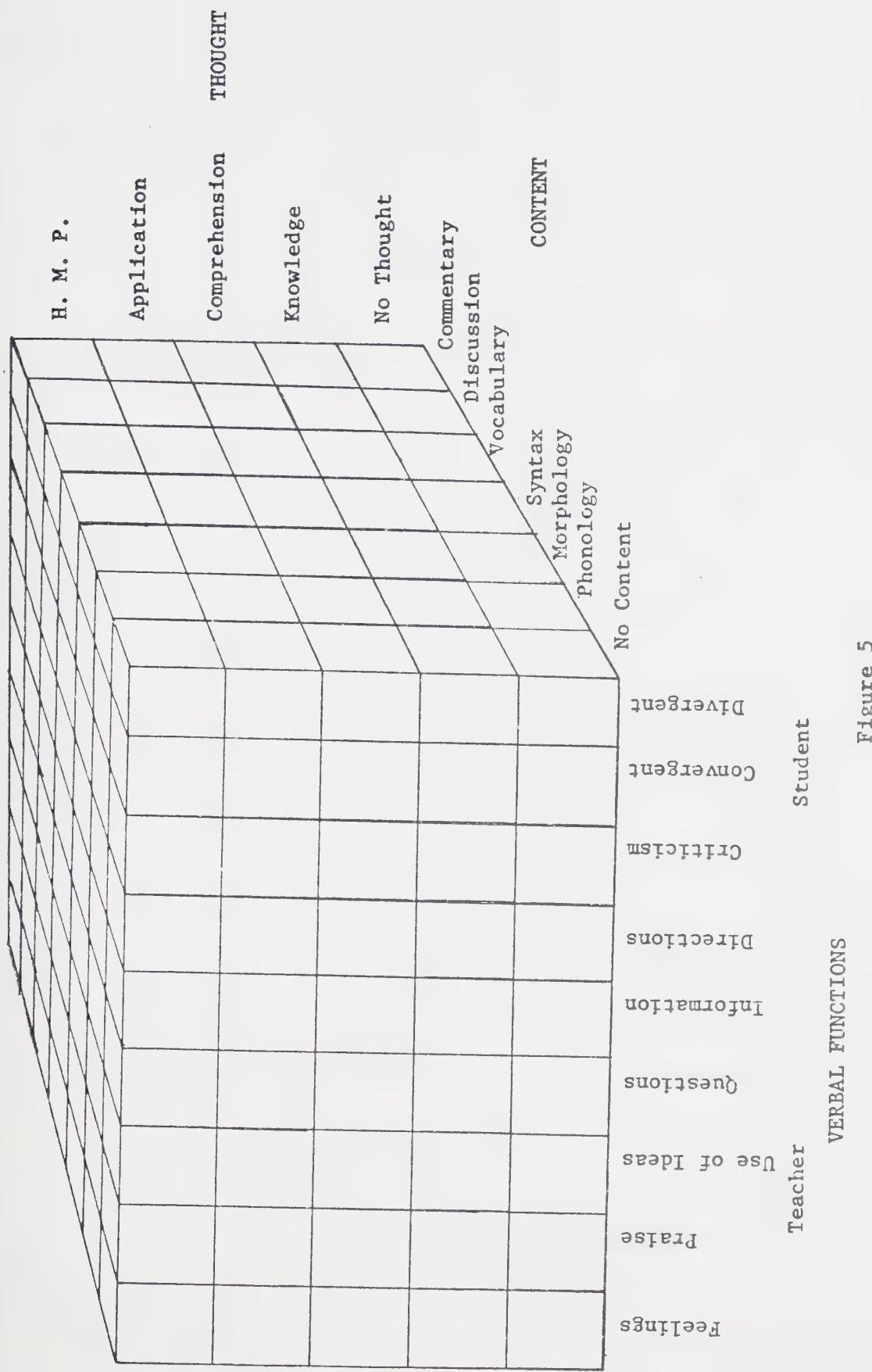
Figure 5

Dimensions of the L2 System

economical configuration. While verbal function 10 (non-verbal
activity) is coded in the same manner as any other category of this
dimension, it serves primarily to preserve the temporal succession
of events. Since the analysis of classroom interaction by means of
the L2 System is essentially concerned with verbalization, non-verbal-
ization is not examined in detail.

An example of coding a sequence of verbal transactions accord-
ing to the categories of the CONTENT (C), THOUGHT (T), and VERBAL
FUNCTION (VF) dimensions is illustrated below:

		C	T	VF
Professeur:	Qu'est-ce que c'est?	4	1	4
Elève 11:	C'est un [u]sine.	4	1	8-11
Elève 23:	C'est une usine.	2	1	9c-23
Elève 11:	Oh, c'est une [u]sine.	2	1	8-11
Professeur:	[y]sine.	1	1	5c
Elève 11:	[y]sine.	1	1	8-11
Professeur:	Très bien.	0	0	2

In this example, the teacher has asked student 11 a lexical
knowledge question which the student answers. The gender error
which he makes is corrected by student 23. Student 11, recognizing
the gender error corrects it but continues to make the phonological
mistake which the teacher subsequently corrects. The teacher then
praises the student although no indication is given as to whether
the praise is associated with the original lexical item, the morph-
ological correction, or the phonological production.

Although the L2 System's analytical procedures permit the

above three-way verbal classification for teachers, students as a group, and individual students, limitations of time and space preclude such detailed description in this investigation. Reported in the next section are the classificatory procedures which have actually been employed in the present study.

ANALYTICAL PROCEDURES

In order to test the applicability of the analytical procedures to be used in the research study employing the L2 System, a pilot investigation was undertaken in the spring of 1974.

The Pilot

Included in the pilot were two classes of French 11 instructed by the same teacher. Transpositional activities T2a to T4a of Lesson 18 Sketch and Mechanism of Voix et Images de France (Renard and Heinle, 1969) were observed and recorded for one-half hour daily over the period of one week for each unit. Ten hours of observational data were gathered.

In addition to the observational data, information about student aptitude, attitude, and achievement was collected. The Modern Language Aptitude Test (Carroll and Sapon, 1959), and selected attitude scales of the National Test Battery (Gardner and Smythe, 1974) were administered to the students prior to the investigation. Students submitted to a criterion-referenced oral production achievement test before the introduction of Lesson 18 Sketch. A substantively but not statistically parallel test was administered

upon completion of the transposition of the unit. A third achieve-

ment test was given to the students after the transposition of the

Mechanism.

The pilot study served primarily as a check on the research

procedures to be used in the study proper. The analytical procedures

associated with the L2 System are described by means of the

pilot data. The statistical results for the pilot study are reported

in Appendix A.

Comprehensive Examination

One analytical procedure involves the examination of the

frequency and per cent distributions of all coded events which occurred

during the observational sessions. This type of analysis indicates the

relative amount of verbalization attributed to the teacher and students

as well as the occurrence of non-verbal activities. When a single

teacher is involved, such investigation permits some indication of

the relative stability of the rate of instructional transactions from

one class to another and over time. Table 7 presents the frequency

and per cent distributions of coded events for the teacher, students,

and non-verbal activities for the pilot study during the Sketch and

the Mechanism of Lesson 18 of VIF. Since little variation occurred

either between classes or over time, the coded transactions appeared

to be quite stable for the pilot classes instructed by the same

teacher.

While the category and/or three second coding interval does

not permit an accurate representation of time deployment, a procedure

which estimates the actual pace of instruction appears to be another

Table 7

Frequency and Per Cent Distribution of Coded Events for the Teacher,
Students, and Non-Verbal Activities During the Sketch and the
Mechanism of Lesson 18 VIF

Class	Coded Event	Sketch		Mechanism	
		frequency	%	frequency	%
Pilot 1	Teacher	1,879	55.9	1,708	51.1
	Students	1,255	37.3	1,381	41.3
	Non-verbal	228	6.8	252	7.5
	Total	3,362	100.0	3,341	99.9
Pilot 2	Teacher	1,984	57.0	1,861	54.1
	Students	1,277	36.7	1,387	40.4
	Non-verbal	222	6.4	189	5.5
	Total	3,483	100.1	3,437	100.0
Total Pilot	Teacher	3,863	56.4	3,569	52.7
	Students	2,532	37.0	2,768	40.8
	Non-verbal	450	6.6	441	6.5
	Total	6,845	100.0	6,778	100.0

source of useful information concerning overall classroom inter-

action. Table 8 presents the method of estimating the pace of

instruction and the number of coded events which transpire per minute

of instruction. The results indicate a general stability of occurrence

of events between classes and over time for a given teacher.

Although the instructional rates are calculated on the basis

of the total number of events, they serve to clarify somewhat the

actual temporal distribution of student verbalization. Calculating

means and standard deviations further indicates the average amount and

variation of verbalization produced by the individual students. Table

9 presents the means, standard deviations, and ranges of the frequency

and time equivalents of individual student verbalization for the

pilot classes. Choral response, which accounted for less than one per

cent of all student verbalization, is excluded from all reports which

examine individual student verbalization in this study. The average

amount of total individual student verbalization tended to vary between

classes indicating that overall frequency and per cent distributions

may in fact conceal class differences since they do not indicate the

number of students on which the sum is based. Moreover, the wide-

spread range in actual verbalization attests to the differences in in-

dividual student verbal participation. These results testify to the

need of examining individual student verbalization in addition to

grouped verbal participation for students.

Unidimensional Distributions

Although the preceding analytical procedures have presented

Table 8

Estimation of the Pace and Number of Coded Events Per
Minute of Instruction

If one event occurred every three seconds, then twenty events would

transpire per minute of instruction

20 events X 60 minutes X 10 hours = 12,000 events.

Actual total coded event for the Pilot Study = 13,623

Pace   13,623 ÷ 12,000 = 1.14

Events took place approximately 14 per cent faster than 20/

minute.

Rate   a) .14 X 3 seconds = .42 seconds

b) 3 - .42 seconds = 2.58 seconds

c) 60 ÷ 2.58 = 23.25 events

The actual rate of instruction was approximately 23 events per

minute.

Events/minute for individual pilot classes were:

Unit	Pilot 1	Pilot 2	Total Pilot
Sketch	23	24	23
Mechanism	22	24	23

Table 9

Means, Standard Deviations, and Ranges of the Frequency and
Estimated Time Equivalents of Individual Student
Verbalization* for the Pilot Classes During the
Sketch and the Mechanism

| Class | N | Unit | Frequency | | | Estimated time (min) | |
			$\overline{X}$	s	Range	$\overline{X}$	Range
Pilot 1	25	S	49.76	21.23	0– 91	2.2	.0–4.0
		M	55.20	22.41	3–113	2.5	.1–5.0
Pilot 2	21	S	60.24	30.55	24–120	2.5	1.0–5.0
		M	65.90	27.26	15–114	2.8	.6–4.8
Total Pilot	46	S	54.54	26.42	0–120	2.3	.0–5.2
		M	60.09	25.31	3–114	2.6	.1–5.0

*excludes choral response

some global descriptions of classroom interaction, they have not

indicated the distributions of teacher and student verbalization

among the categories of the CONTENT, THOUGHT, and VERBAL FUNCTION

dimensions. While both frequency and per cent distributions are

possible for this kind of analysis, the latter is favored since

temporal differences between classes are minimized. Unidimensional

summary results serve to indicate the relative usage of the various

categorizations of each separate dimension. Table 10 presents the

per cent distribution of the categories of the THOUGHT dimension

for the pilot teacher and students during the Sketch and the Mechanism

of Lesson 18 of VIF. Inspection of the table indicates the relative

emphasis of the cognitive classification between classes and over time

for the pilot teacher. Furthermore, differences between clasroom

cognitive functioning between the teacher and the students are evident

from the distribution. For example, while a sizeable proportion of

teacher verbalization was strictly functional (002, 004, 006) little

student verbalization was classified in this manner indicating that

students generally produced speech which manifested both cognitive

(and substantive) qualities. The discrepancies between teacher and

student distributions illustrate the necessity of exploring not only

the prorated distributions but also the actual teacher-student inter-

active sequences which occur in the classroom.

Teacher-Student Interaction

The interactive aspect of teacher-student verbalization patterns

is analyzed in the L2 System by tabulating teacher categories of each

dimension for every individual student. If the teacher talks immediate-

Table 10

Per Cent Distribution of Teacher and Student Verbalization Among the
Categories of the THOUGHT Dimension During the Sketch and the
Mechanism

		Teachers				Students			
THOUGHT		Pilot 1		Pilot 2		Pilot 1		Pilot 2	
		S	M	S	M	S	M	S	M
0	No Thought	18.8	24.4	20.4	24.4	3.9	3.7	3.4	3.2
1	Knowledge	52.6	66.0	55.4	65.5	43.6	48.7	50.7	57.2
2	Comprehension	22.9	7.4	20.4	6.8	12.2	3.4	16.3	5.6
3	Application	5.5	1.8	3.5	2.7	28.8	34.4	22.1	24.5
4	H. M. P.	.2	.3	.3	.6	11.6	9.8	7.5	9.4

ly prior to a student, his verbalization is classified as being
a <u>solicitation</u>, whereas if he talks immediately after a student
his verbalization is classified as <u>reinforcement</u>. For example:

		C	T	VF
Professeur:	Demande à Paul s'il va à l'école!	3	1	6
Elève 42:	Paul, est-ce que tu vas à l'école?	3	1	8q-42
Elève 64:	Oui, j'y vais.	3	1	8-64
Professeur:	Oui, j'y vais.	3	1	2r

This interactive sequence indicates that student 42 was called
upon to verbalize in which the teacher verbalization would be tabu-
lated into categories of syntax, knowledge, and verbal direction used
as solicitors for student 42. Similarly, student 64 received rein-
forcement classified according to syntax, knowledge, and repetitive
praise. While it is recognized that this type of sequential analysis
is arbitrarily selective, it provides some indication of the reciprocal
transactions which occur between the teacher and his students.

For any given time period, i.e., the Sketch and the Mechanism,
each student would have attributed to him a frequency tabulation of
the total number of times he was called upon to verbalize and was pro-
vided with teacher feedback. In addition, each student would have a
frequency tabulation of the verbalization which he actually produced.
Comparing student participation with the solicitation and reinforcement
associated with it permits an analysis of the effect of teacher in-
structional strategy with respect to student verbalization. Furthermore,
by treating participation, solicitation, and reinforcement as frequency
units for individual students, it is possible to calculate correlation

coefficients which describe the degree of relationship between observationally-derived data and criterion measures.

Table 11 presents the proportion of student verbalization which was directly solicited and reinforced for each pilot class during the Sketch and the Mechanism of Lesson 18 of VIF. The results indicate that anywhere from one-half to two-thirds of all student verbalization occurred as a consequence of teacher solicitation. A generally similar amount of teacher feedback was provided to the students. These global results indicate that student verbalization tended to occur in association with teacher verbalization. Detailed examination of the participation, solicitation, and reinforcement of the individual categories of each dimension provides some indication of the differential effects of the cognitive, substantive, and functional verbalization of both teachers and students.

This section has summarized the analytical procedures associated with the L2 System. Pilot data were used to illustrate the various procedures. The results of the pilot study are reported in Appendix A.

SUMMARY

This chapter has presented a description and examples of each of the categories of the L2 System. It has also described both the coding and analytical procedures associated with the instrument.

Table 11

Proportion of Student Verbalization* Which Was Directly Solicited and
Reinforced for Each Class During the Sketch and the Mechanism

Class	Unit	Participation f	Solicitation f	Prop.	Reinforcement f	Prop.
Pilot 1	S	1,244	732	.59	760	.61
	M	1,380	712	.52	754	.55
Pilot 2	S	1,265	807	.64	855	.68
	M	1,384	826	.60	862	.62

*excludes choral response

CHAPTER V

STUDENT CRITERION MEASURES

INTRODUCTION

While the preceding chapters have presented the development, description, and procedures associated with the L2 System, this chapter describes contextually and statistically the student criterion measures with which the observationally-derived variables are to be correlated. Three specific types of measures have been included: aptitude, attitude, and achievement. Aptitude and attitude represent cognitive and affective student characteristics, respectively, which are relatively invariant and enduring and not readily amenable to change by instruction. Employing such measures as criteria provides some indication of the stability of their relationship with observational variables. Achievement represents a student's ability to demonstrate the degree to which he has assimilated the material under instruction. Included in the present study are three achievement measures, all criterion-referenced. The first test provides some indication of the student's ability prior to instruction while the remaining two tests indicate the student's ability after instruction. These three tests have been labelled as the pre- and post-tests of the Sketch and the post-test of the Mechanism. Correlating the observationally-derived variables with the measures of achievement provides some indication of the relationship between the actual instructional pro-

cesses as characterized by the observed behavior and the resultant student learning.

APTITUDE

One personal characteristic which is considered to be relatively stable and not readily amenable to change by instruction is aptitude. Language aptitude as measured by tests appears to consist of at least four identifiable abilities:

1. Phonetic coding - the ability to 'code' auditory phonetic material in such a way that this material can be recognized, identified, and remembered over something longer than a few seconds.

2. Grammatical sensitivity - the ability to recognize the grammatical functions of words in sentence contexts.

3. Rote memorization ability - the ability to learn a large number of associations in a relatively short time.

4. Inductive language learning ability - the ability to infer linguistic forms, rules, and patterns from new linguistic content itself with a minimum of supervision or guidance (Carroll, 1962, p. 130)

Given the extensive research conducted by Carroll on the constitution of language aptitude, the standardized testing instrument developed by him in collaboration with Sapon has been chosen as the criterion measure for aptitude in the present study.

Modern Language Aptitude Test

The Modern Language Aptitude Test (Carroll and Sapon, 1959), designed chiefly to provide some indication of an individual's probable degree of success in learning a second language, has been found

to be particularly useful in predicting success in learning to speak and understand a second language. The instrument is the outcome of five years of research conducted during the years 1953-1958 at Harvard University in which the experimental tests were administered to approximately 5,000 persons who represented high school, college, and military and governmental samples.

The test is composed of five relatively uncorrelated* subtests which more or less consistently shared good validity and made unique contributions to the prediction of success in second languages. The five subtests are:

Part I Number Learning (15 items) measures one aspect of the memory component of second language aptitude as well as an auditory alertness factor.

Part II Phonetic Script (30 items) measures the ability to learn correspondences between speech sounds and orthographic symbols and the memory for speech sounds.

Part III Spelling Clues (50 items) measures the same kind of sound-symbol association ability as measured by the Phonetic Script subtest although to a lesser extent while also providing some indication of the student's knowledge of English vocabulary.

Part IV Words in Sentences (45 items) measures the sensitivity to grammatical structure and may be expected to have particular re-

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*The validity and reliability data for the instrument reported in the present study represent only the grade ten sample used in the Harvard Study. The reader is referred to the test manual for a statistical description of the entire sample (Carroll and Sapon, 1959, pp. 8-19).

levance to the students' ability to handle the grammatical aspects
of a second language.

Part V Paired Associates (24 items) measures the rote memory
aspect of second language learning. (Carroll and Sapon, 1959, p. 3)

The reported validity, reliability, and subtest intercorrela-
tions for the grade ten sample are presented in Tables 12 to 14.
Table 12 presents the means, standard deviations, and concurrent
vaildity coefficients between selected criteria and the aptitude test
score. Table 13 presents the odd-even reliability coefficients and
the standard errors of measurement for the instrument. Table 14 pre-
sents the intercorrelations among the five subtests for the grade
ten sample.

ATTITUDE

Another factor which has been found to be independent of
language aptitude yet related to successful second language perfor-
mance is attitude (Gardner and Lambert, 1972). Attitude, like apti-
tude, tends to represent a fairly enduring set of beliefs or opinions
toward objects or situations. While measured attitude is composed of
many variables, the present study is concerned primarily with the
motivational aspect of second language learning since it essentially
represents the amount of effort and perseverance which a student is
willing to exert in order to achieve successful learning. Further-
more, the motivational variables have been found to be consistently
related to second language success (Gardner and Lambert, 1972).

Table 12

Validity Coefficients for the MLAT for Grade 10*

Language	School	Sex	N	Criterion	Total Test		
					r	M	SD
French	C	F	38	Course Grade--First Term	.56	104.9	23.3
French	C	F	37	Course Grade--Second Term	.39	105.7	22.9
French, Spanish	D	F	33	Course Grade	.67	92.7	19.9
French, Spanish, German	A	M	29	Course Grade	.58	94.1	22.8
		F	29		.53	91.0	23.4

*Summarized from Carroll and Sapon, 1959, p. 12.

Table 13

Spearman-Brown Odd-Even Reliability Coefficients and Standard Errors
of Measurement of Parts of the Modern Language Aptitude Test for
Grade 10*

	Boys (N = 116)				Girls (N = 144)			
	r_{11}	SE_M	M	SD	r_{11}	SE_M	M	SD
Part I	.84	3.4	25.0	8.5	.86	3.3	26.1	8.8
Part II	.71	2.1	21.5	3.9	.67	2.1	21.5	3.7
Part III**	.60	3.2	11.7	5.0	.65	3.2	16.6	5.5
Part IV	.86	2.9	19.4	7.7	.85	2.9	22.7	7.4
Part V	.87	2.1	13.8	5.7	.88	1.8	15.9	5.3
Total Test	.92	6.3	90.4	22.2	.92	6.6	98.6	23.5

*Summarized from Carroll and Sapon, 1959, p. 18.

**Data for Part III are included only for 37 boys and 53 girls at the
grade 10 level who took it under special circumstances in which
odd-numbered items and even-numbered items were printed as separate
sections and timed separately.

Table 14

Intercorrelations of Parts of the Modern Language Aptitude Test
For Grade 10*

	Boys (N = 116)					Girls (N = 144)				
	I	II	III	IV	V	I	II	III	IV	V
Part II	.32					.39				
Part III	.28	.21				.30	.41			
Part IV	.36	.40	.29			.52	.53	.52		
Part V	.48	.47	.28	.47		.43	.42	.29	.37	
M	25.0	21.5	10.8	19.4	13.8	26.1	21.5	12.5	22.7	15.9
SD	8.5	3.9	5.7	7.7	5.7	8.8	3.7	6.7	7.4	5.3

*Summarized from Carroll and Sapon, 1959, p. 19.

The extensive research undertaken by Gardner and his associates over the past decade and a half on attitude in primarily Canadian settings appears to justify the inclusion of selected scales of the testing instrument as the attitude criterion measure for the present study.

French Attitude Survey

Five scales concerned primarily with the motivational component of second language attitude were selected from the National Test Battery* (Gardner and Smythe, 1974) to provide some indication of the students' attitudes toward learning a second language. The five specific attitude scales were chosen because they have been found to be related fairly consistently to second language success in various geographic locations over an extended period of time (Gardner and Lambert, 1959; 1972; Gardner et al., 1974). Furthermore, the specific items constituting the final versions of the selected attitude scales resulted from a pilot study and a subsequent validation study encompassing approximately 2,000 students at the grades seven to eleven levels of instruction of French as a second language. The five scales are:

I. Integrative Orientation (4 items). The items emphasize the importance of learning French in order to afford subjects the opportunity of social integration with and a sharing of the culture of the second language reference group. A high score on this scale reflects a

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*The investigator received permission from Dr. Gardner to use the attitude scales and to report statistical data from the validation study.

student's acceptance of the validity of integrative reasons for studying a second language.

II. <u>Instrumental Orientation</u> (4 items). These items stress the pragmatic or utilitarian value of learning a second language. A high score reflects the student's agreement as to the instrumental value of learning a second language.

III. <u>Attitudes Toward Learning French</u> (10 items). Half of the items are positively worded and half are negatively worded. A high score indicates a positive attitude toward learning a second language.

IV. <u>Desire to Learn French</u> (10 items). These three* option multiple choice items are included to measure a student's desire to learn French, with high scores representing this desire. This scale differs from the motivational intensity scale in that it attempts to index in a general sense the degree to which students report that they want to actually perform in their French studies.

V. <u>Motivational Intensity</u> (10 items). These three** option multiple choice items were designed to measure the intensity of a student's motivation to learn a second language in terms of work done for classroom assignments, future plans to make use of and study the language, and the value the student places on developing a knowledge of a second language. A high score represents the student's self-report of a high degree of effort being spent in acquiring the second language (Gardner et al., 1974, pp. 3-4 - 3-7).

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*Two items have four options.

**One item has four options.

The reported multiple regression analysis representing the attitude scales which contributed most to the prediction of French achievement criteria for a grade ten sample are reported in Table 15. The Kuder-Richardson Formula 20 Reliability Coefficients of internal consistency for the grade ten students are reported in Table 16. For a more detailed analysis of the results, the reader is referred to the cited report.

In the present study, a two part fifty item* attitude survey was administered to the students. Part A contained the Integrative Orientation, Instrumental Orientation, and the Attitudes Toward Learning French scales. For the items of these attitude scales, a five point Likert scale was substituted for the seven point Likert scale employed in the National Test Battery as it was felt that such description would provide sufficient attitudinal differentiation for the purposes of the present study. Part B contained the Desire to Learn French and the Motivational Intensity scales. The number of points assigned per question followed the procedure suggested by Gardner. All items in the survey were randomized. Appendix B presents the attitude survey and the questions comprising each scale.

ACHIEVEMENT

A major criticism directed toward the use of achievement measures in school setting observational studies is the discrepancy

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*Twelve items chosen from the remaining attitude scales of the National Test Battery were included in the questionnaire in order to increase the number of questions thereby obscuring somewhat the specific purpose of the survey.

Table 15

Summary of Multiple Regression Analyses
for Grade 10 (N=338)*

Criterion	Predictors	Beta	R
Self-rating: Total	French Classroom Anxiety	-.46	
	MLAT - Total	.40	
	French Course (evaluation)	.31	
	General Classroom Anxiety	.27	.74
Teacher-rating: Speaking	MLAT - Total	.38	
	French Course (evaluation)	.30	
	French Classroom Anxiety	-.19	
	I.Q.	.19	.69
Teacher-rating: General Skills	MLAT - Total	.33	
	Desire to Learn French	.30	
	French Classroom Anxiety	-.18	
	I.Q.	.17	.65
CATF: Total	MLAT - Total	.41	
	Motivational Intensity	.22	
	I.Q.	.17	
	French Classroom Anxiety	-.16	.65
Aural Comprehension Test	MLAT - Total	.37	
	French Classroom Anxiety	-.34	
	General Classroom Anxiety	.19	
	Integrative-Instrumental Difference Score	.11	.52

*Gardner et al., 1974, p. 4-61.

Table 16

Kuder-Richardson Formula 20 Reliability Coefficients of Internal
Consistency for the Selected Attitude Scales for Grade 10
(N=338)*

Scale	r
Integrative Orientation	.82
Instrumental Orientation	.58
Attitudes Toward Learning French	.94
Desire to Learn French	.86
Motivational Intensity	.82

*Summarized from Gardner et al., 1974, p. 4-50.

between the actual skills taught in the classroom during observation
and the skills measured by the standardized tests which are generally
employed as the criterion (Rosenshine and Furst, 1973, p. 163). One
would seriously question the content validity of standardized test-
ing instruments in establishing the validity of content skills taught
in a specific lesson. By employing criterion tests which correspond
to the material under instruction in the classroom during observation,
some indication of the congruence between the curriculum, the teacher's
behaviors and the student criterion measures may be obtained (Rosen-
shine and Furst, 1973, p. 163).

Focusing on a particular unit of instruction permits the
observation of all teachers instructing similar content in addition
to allowing direct measurement between the students' achievement on
the criterion and the observational data associated with the instruc-
tion. By referencing the criterion instrument to the content under
instruction, such measurement becomes a reality. A criterion-
referenced achievement test is described as follows:

> Underlying the concept of achievement measurements is
> the notion of a continuum of knowledge acquisition
> varying from no proficiency at all to perfect
> performance. An individual's level falls at some
> point on the continuum as indicated by the behaviors
> he displays during testing. The degree to which his
> achievement resembles desired performance at any
> specified level is assessed by criterion referenced
> measures of achievement or proficiency. The standard
> against which a student's performance is compared when
> measured in this manner is the behavior which defines
> each point along the continuum. The point is that the
> specific behaviors implied at each level of proficiency
> can be identified and used to describe the specific
> tasks a student must be capable of performing before
> he achieves one of these knowledge levels. It is in

this sense that measures of proficiency can be criterion-referenced (Glaser, 1963, p. 519).

Since the present study is concerned with the verbal interaction between the teachers and students during the transposition of the Sketch and Mechanism of Lesson 17 of Voix et Images de France (Renard and Heinle, 1969) it was necessary to develop tests which would relate specifically to the content and skills associated with the transpositional activities in order that the achievement criterion be as valid as possible. Consequently, three criterion-referenced oral production tests, two of which would be substantively and statistically parallel and concerned with the content of the Sketch, and one concerned with the content of the Mechanism of Lession 17 of VIF were developed.

Oral Production Tests

Development. The first step in the development of the three testing instruments was to consult the teacher's manual of Voix et Images de France in order to determine the grammatical and lexical content and skill emphasis of the Sketch and Mechanism of Lesson 17 (Renard and Heinle, 1969, p. 127; pp. 269-271, and pp. 116-117, respectively). If the tests reflected the objectives, substance, and skills outlined by the authors of the program, the achievement measures should result in some degree of content validity. Appendix C outlines the above considerations for the Sketch and Mechanism of Lesson 17 of VIF.

Subsequent to the above contextual analysis, a test blueprint and possible marking scheme which reflected the objectives, content, and skills of the lesson was devised. The blueprint and marking

scheme were presented to five "experts"* who were asked to determine
whether or not the materials accurately reflected the substance of the
lesson. Each person was approached individually at which time the
underlying rationale of the tests was explained in detail. Discussion
ensued in which the test items, blueprint, and marking scheme were
modified. After all judges had been consulted individually, the re-
vised tests were examined by the group as a whole. Once the final
forms and wording of items had been agreed upon, the instruments were
submitted to a field-test.

Description. Each of the three achievement tests had an
identical blueprint based on the content and skill emphasis suggested
by the VIF methodology for Lesson 17. The blueprint is presented in
Figure 6. The Sketch was measured by two instruments—Forms A and B
which were designed to be parallel so that one form could be used to
provide some indication of students' achievement abilities prior to
instruction while the other form could serve as a post-test to
measure their abilities after instruction. The content of the Mechanism
would be measured by one test only to be administered to the students
upon completion of the instruction. The three tests are presented
in Appendix D.

All three tests were designed to be administered simultaneously

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*The five experts consisted of two university professors, one
of whom was an authority on the French language, the other a specialist
in the methodology, the supervisor of second language instruction for
the Edmonton Public School Board, and two high school French teachers
who had considerable experience teaching not only VIF but also other
second language programs.

	Phonology	Structure	Vocabulary	
QUESTION–ANSWER				
Knowledge	15	15		30
Comprehension			15	15
DESCRIPTION–RESUME				
Application	10	10	10	30
H. M. P.		10		10
	25	35	25	

Figure 6

Blueprint for Lesson 17 Achievement Tests: Sketch, Forms A and B, and Mechanism

to all students in a class in an audio-active-compare language laboratory. The instructions and timing sequences for each test were identical and provided by means of a master tape which could be administered by a testing assistant. Subsequent to the test administration, the individually-recorded student speech samples would be graded by the test markers.

Each test was composed of three parts: a question-answer section, a description, and a résumé, each of which represents the activities emphasized during the transposition phase of VIF. The question-answer section consisted of five questions each of which was presented aurally by means of the test tape. For each question, the student was given ten seconds in which to answer. The student's response was scored for its phonological, grammatical, and semantic accuracy. A total of nine marks was assigned for each question—three each for phonology, structure, and meaning. One point was deducted per error in each classification to a maximum of three so that a student could not get minus points.

The description was based on a picture which the student was requested to describe, while the résumé was based on a series of four pictures which told a story which the student was requested to recount. Each student was provided with a test booklet which contained these two. In each case, the student was given thirty seconds in which to study the respective visual information followed by one minute in which he recorded his narration. Both the description and résumé were marked in the same way in which the student received marks for his verbalization. A maximum of five points each was awarded for

vocabulary, structure, organization, and fluency.

In order to determine the appropriateness of the content and marking scheme of the three tests, they were administered to three experienced French teachers who were familiar with the content of Lesson 17. The teachers were asked to come to the Education Building where they submitted to the three achievement tests in the second language instruction division's language laboratory. No additional information beyond that provided to the students by means of the test tape and booklet was provided to the teachers. Table 17 presents the results for each teacher on the tests. Not all three teachers attained perfect scores. Two teachers failed to make pronoun substitutions consistently in the response section. Furthermore, they did not necessarily employ closing sentences or demonstrate style consistency in their descriptions and résumés. The reader is referred to Appendix D for a description of the marking criteria. However, since one teacher attained perfection on two tests, and the other two teachers scored above 90 per cent, it was felt that the tests were appropriate albeit perhaps somewhat difficult for high school students.

Field-Test. In order to provide a statistical description of the tests which would reflect their actual appropriateness for high school students, the three criterion instruments were submitted to a field-test. As the tests had been developed in the fall term prior to the introduction of Lesson 17 to French 11 students, the measures were administered to a class of seventeen French 21 students who had studied the lesson in the spring. The class was located in a high school which contained an audio-active-compare language laboratory but was not in-

Table 17

Teacher Proficiency on the Three Oral Production Achievement Tests

Test	Maximum Score	Teacher 1	Teacher 2	Teacher 3
Sketch - Form A				
Question-Answer	45	45	44	43
Description	20	19	19	18
Résumé	20	20	19	19
Total Test	85	84	82	80
%		99	96	94
Sketch - Form B				
Question-Answer	45	45	43	41
Description	20	20	19	18
Résumé	20	20	18	18
Total Test	85	85	80	77
%		100	94	91
Mechanism				
Question-Answer	45	45	44	45
Description	20	20	19	20
Résumé	20	20	19	20
Total Test	85	85	82	85
%		100	96	100

volved in the study proper.

As Forms A and B of the Sketch test were designed to be parallel, the order of presentation of these two tests was alternated among the students so that no order effect would influence the analysis of the results. Consequently, nine students submitted to Form A while eight students submitted to Form B simultaneously. Upon completion of the first test, all students were given a five minute break in which they were not allowed to discuss the tests. The second test was subsequently administered. Upon completion of the second test, the students were given another five minute break with the same restriction against conversation. Finally the Mechanism test was administered to all seventeen students at the same time.

Statistical Analysis. Once the tests had been scored by the investigator, the results were submitted to statistical analysis. Forms A and B were substantively parallel. The determination of their statistical correspondence is examined first. Table 18 presents the means and variances of the major subtests for Forms A and B of the Sketch tests. The description and résumé sections have been combined as they measure essentially the same tasks in the achievement test and are marked accordingly. While the means and variances of the Description-Résumé subtests for Forms A and B did not differ statistically, significant differences were found between the Question-Answer subtests for Forms A and B which resulted in statistical differences between the total scores of the two tests. Consequently, the description and résumé sections were left intact while the question-answer sections required modification.

Table 18

Student's t Values for Means and Variances of Major Subtests of the
Original Versions of Forms A and B of the Oral Production Tests
for the Sketch (N=17)

Subtest	$Mean_A$	$Mean_B$	t	df	p
Question-Answer	33.12	31.35	1.34	16	.19
Description-Résumé	27.18	27.24	− .05	16	.96
Total Test	60.24	57.18	−2.14	16	.05
	$Variance_A$	$Variance_B$	t	df	p
Question-Answer	32.14	36.84	1.29	15	.22
Description-Résumé	17.47	14.06	− .46	15	.65
Total Test	75.24	105.44	.71	15	.48

After considerable manipulation, items 1, 2, 4, and 5 of Forms A and B were interchanged. This procedure was defensible since each numerically-equivalent question in both Forms A and B measured the same content. The substitution of the four items, therefore, did not alter the contextual correspondence between subtests although it did establish their statistical parallelism. This adjustment equalized the means and variances of the question-answer section which produced a similar effect with respect to the total scores for Forms A and B of the Sketch test. Table 19 presents the means and variances of the major subtests for Forms A and B of the revised Sketch tests.

Table 20 presents the means, standard deviations, Alpha Coefficients of internal consistency, and standard errors of measurement for the revised Forms A and B of the Sketch and the Mechanism tests. The statistical description of the Mechanism test indicated that it was adequate in reliability and did not require any modification. In order to determine the relative rank order of the students' marks, the test scores were correlated with the teacher's oral marks for the students. Table 21 presents the correlation coefficients between the total scores for each achievement test and the teacher's oral grades as well as the intercorrelations among the tests themselves. All correlations reached the 0.01 level of statistical significance with the exception of the correlation between the Sketch--Form A and the Mechanism tests (p = 0.02). The relationships revealed by the preceding analysis suggest that the tests were sufficiently reliable for use in the study.

Table 19

Student's t Values for Means and Variances of Major Subtests of the
Revised Versions of Forms A and B of the Oral Production Tests for
the Sketch (N=17)

Subtest	Mean$_A$	Mean$_B$	t	df	p
Question-Answer	31.35	31.71	-.22	16	.84
Description-Résumé	27.18	27.24	-.05	16	.96
Total Test	58.53	58.94	-.22	16	.83
	Variance$_A$	Variance$_B$	t	df	p
Question-Answer	26.82	34.33	-.15	15	.88
Description-Résumé	17.47	14.06	-.46	15	.65
Total Test	78.60	74.17	-.14	15	.89

Table 20

Means, Standard Deviations, Alpha Coefficients of Internal Consistency,
and Standard Errors of Measurement for the Major Subtests of the Three
Oral Production Achievement Tests (N=17)

Test	Mean	S.D.	r	S.E.
Sketch – Form A				
Question-Answer	31.35	6.07	.70	3.33
Description-Résumé	27.18	4.18	.82	1.79
Total Test	58.53	8.87	.81	3.90
Sketch – Form B				
Question-Answer	31.71	5.86	.61	3.63
Description-Résumé	27.24	3.75	.69	2.10
Total Test	58.94	8.61	.76	4.21
Mechanism				
Question-Answer	23.82	8.50	.81	3.74
Description-Résumé	25.47	6.58	.89	2.17
Total Test	49.29	12.90	.87	4.64

Table 21

Pearson Product-Moment Correlation Coefficients Between Test and
Teacher Assigned Oral Marks (N=17)

| | Sketch | | |
	Form A	Form B	Mechanism
Form B	.62**		
Mechanism	.55*	.77**	
Teacher	.68**	.68**	.80**

*p ≤ .05; ** p ≤ .01.

Test Marker Training and Reliability

Since the achievement data collected in the present study required the evaluation of actual speech samples by human beings, it was necessary to train appropriate people to employ the marking scheme consistently and reliably with respect to all test tapes.

Three qualified French speakers, two certified teachers and one second language education student*, were engaged to grade the tests. Initially the markers were given the text of the lesson and the objectives of the units under instruction. The markers were subsequently presented with an example of the format of the three tests. The rationale and marking scheme were explained to them by the investigator who illustrated the discussion by means of actual test tapes.

Two four-hour training and practice sessions were provided for the markers, the first one concerned with the Question-Answer section and the second one with the Description-Résumé sections. Each section was thoroughly explained and discussed. The markers practiced implementing the marking scheme with the investigator acting as the final authority on the accuracy of the scoring. After a few tests were marked communally and then another couple were scored simultaneously but independently and had been discussed, the investigator was satisfied that the three markers understood the assessment procedure sufficiently well to proceed. The remainder of the four hour period was used to practice rating the speech samples. Since many test

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*The student held a bachelor's degree with a major in French and was currently enrolled in the after degree diploma program in second language instruction.

tapes* would be evaluated over the duration of the study, the investigator felt that such supervised practice would assist the markers in developing facility and accuracy in the test evaluation.

In order to preserve the recorded verbalization of each student, all audiotapes were transcribed. This procedure would permit subsequent examination of the evaluation if necessary since it was not possible to retain the actual speech samples of all the students in the sample. Moreover, this procedure had been found to be invaluable by the investigator during the pilot study.

After the eight hours of training and practice, inter-rater reliability was estimated for each person. The Pearson Product-Moment Correlation Coefficients of this assessment of reliability are reported in Table 22. These were deemed sufficiently high to proceed with the marking of the achievement tests in the study.

SUMMARY

This chapter has described substantively and statistically the measures of student aptitude, attitude, and achievement which served as the criteria with which the selected observationally-derived variables associated with the L2 System would be correlated. While adequately valid and reliable aptitude and attitude tests were available, the development of specific achievements tests which measured the content of the lesson under instruction was required for the study.

The aptitude and attitude measures provide some indication of student cognitive and affective characteristics which are not

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*Given the sample of 185 students each of whom would submit to three achievement tests, a total of 555 test tapes would be produced.

Table 22

Pearson Product-Moment Correlation Coefficients of Test Marker
Reliability After Eight Hours of Training and Practice

Check One

Marker	1	2	3
2	.98		
3	.85	.91	
4	.90	.90	.90

Check Two

Marker	1	2	3
2	1.00		
3	.90	.88	
4	.90	.89	.89

Check Three

Marker	1	2	3
2	.97		
3	.99	.99	
4	.97	.97	.99

necessarily related to classroom instruction, thereby providing a
somewhat independent assessment of the students. The use of such
measures as criteria for the L2 System indicates the relationship
between selected inherent student characteristics which are not neces-
sarily manifested behaviorally, and actual overt classroon verbalization.

The use of achievement as a criterion measure serves a somewhat
different function especially when criterion-referenced tests are
employed. Correlating data based on actual classroom verbalization
with achievement data which represent the student's ability to utilize
the content and skills associated with the specific instructional
sequences provides a direct reflection of the relationship between
overt classroom verbalization and student knowledge acquisition. The
use of three achievement measures, each of which examined the students'
language competence at different points in time with respect to the
instruction, provides some indication of the stability of the
associations should any exist between observational and achievement
data.

CHAPTER VI

RESEARCH PROCEDURES

OVERVIEW

While the preceding chapters have presented the development and description of the L2 System and the criterion measures, this chapter reports the research procedures employed in the collection of the data. The first section outlines the selection and description of the sample. Recounted in the next section are the procedures associated with the collection of the data. The methods of maintaining the recording skills of the principal observer and the achievement test markers are subsequently described. Finally, the steps necessary to prepare the data for analysis are reported. A brief summary concludes the chapter.

SAMPLE

Selection

Subsequent to receiving permission to conduct the study from the Research Division of the Edmonton Public School Board, the investigator was provided with a list of potential participants by the supervisor of second language instruction. Once the consent of the principals was obtained, the respective second language department heads were contacted in order to meet with the teachers.

Since as much experimental control as possible was exercised in the selection of the sample, certain criteria governed which schools and teachers could participate in the study. Each teacher

was required to instruct two French 11 classes during the fall
semester of 1974. By definition French 11 represents the fourth
level of a six year program in which Voix et Images de France
(Renard and Heinle, 1969) is the method of instruction. Furthermore,
each school was required to have an audio-active-compare language
laboratory installation.

When the investigator met with the teachers, the purposes
and procedures of the study were explained to them. The teachers
were assured that their participation was strictly voluntary; should
they wish to take part, their anonymity would be safeguarded. All
four teachers who were approached agreed to participate in the study.

Description

Teachers. The sample consisted of four teachers—two males
and two females—each of whom instructed two grade ten French 11
classes during the fall semester of 1974. Two of the teachers
instructed in the same high school while the other two taught in
separate schools. All teachers were degree holders and had a mini-
mum of five years of teaching experience using Voix et Images de
France (VIF). Furthermore, all four teachers* had some previous
knowledge of the Flanders observational instrument associated with
the earlier in-service training study (McEwen, 1972). While the

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*One teacher, who had not participated in the in-service study,
was provided with the instructional manual and the training experiences
involved in it (McEwen, 1972, p. 74) prior to the present study. This
procedure was undertaken in order to dispel any possible differences
between teachers which may be attributable to receiving interaction
analysis training.

educational and experiential backgrounds of the teachers made them a fairly homogeneous group, they may represent a rather atypical sample of the generality of second language teachers.

Students. The 185 students who took part in the study did so as a consequence of their teachers' involvement in it. The students, who were in their first year of high school, generally had three years of junior high school experience with VIF instruction. Since students of a specific grade and course level are randomly assigned to the subject matter teachers in the Edmonton Public high schools, the student sample represents a fairly characteristic body of grade ten French 11 students in urban Alberta centres.

DATA COLLECTION

Procedural Considerations

Since the investigation necessitated the collection of a substantial amount of data, Barber's procedural recommendations outlined to avoid research pitfalls which might contaminate the results were followed as closely as possible (Barber, 1973, pp. 399-401). The nine specific investigator and experimenter effects which can influence research findings are:

Investigator Effects
1. Paradigm
2. Loose Protocol
3. Analysis
4. Fudging

Experimenter Effects
5. Attributes
6. Failure to Follow Protocol
7. Misrecording
8. Fudging
9. Unintentional Expectancy (Barber, 1973, p. 383).

Every effort was made in this study to represent the data as accuratedly as possible. While the extensive training provided to the observers and test markers was described in the preceding chapters, a program designed to maintain these skills was additionally undertaken during the collection of the data. Furthermore, every attempt was made to de-emphasize the role of the investigator by employing other personnel to gather information about the students. This procedure served two major purposes:

1) Since the students saw the investigator only when she observed the classes, they were unaware that all data collected about them pertained to the same study which might have influenced their behavior.

2) By limiting the contact with the students to direct observation, the investigator would not be unintentionally biased toward them by their abilities associated with the aptitude, attitude, and achievement measures.

Although it was recognized that the study itself was ultimately directed by the investigator, minimizing her overt influence over the collection of the data was felt to produce results which were as valid as possible.

Criterion Measures

All aptitude, attitude, and achievement criterion measures were presented in the same order to all eight classes. The actual dates on which the students submitted to a particular test were determined by the times when each class was to be observed.

The achievement test markers and a former colleague of the investigator assisted with the administration of the aptitude and attitude tests. In order that the students in the schools be unaware that all data collected were associated with the same study, these people alternated the tests so that no one class was administered the two criterion measures by the same person. All three achievement tests were administered to all classes by one of the second language testing assistants employed by the school board. The particular testing assistant chosen for the study was familiar with the language laboratories in the three schools and was subsequently able to operate each of them.

Approximately one month prior to direct observation, the Modern Language Aptitude Test (Carroll and Sapon, 1959) was administered to the students in the language laboratory. Each student was provided with a test booklet and an answer sheet. All instructions and timing intervals were supplied by means of the test tape.

The selected attitude scales of the National Test Battery (Gardner and Smythe, 1974) were administered to the students in their classrooms approximately two weeks later. The procedure to be followed was clearly prescribed in the verbal and written instructions given to the proctors. Each student was provided with a copy of the attitude survey, an IBM answer sheet, and an HB pencil.

Immediately prior to the introduction of the Sketch of Lesson 17 of VIF, the first of the three Oral Production Tests developed specifically for the study was administered to the students. Random selection determined which classes received Form A or Form B of

the Sketch as the pre-test. The alternate form subsequently served as the post-test of the Sketch. Three classes received Form A (C1, C2, D1) while five received Form B (A1, A2, B1, B2, D2) as the pre-test.

While the pre-test of the Sketch was administered before the introduction of the unit, the post-test was administered on the last day of observation when the lesson had been completed. The Mechanism post-test was administered on the last day of observation of the second unit when it had been completed.

The three achievement tests were administered in the language laboratory by the testing assistant. All directions and timing sequences were provided by means of the test tape. Each student was provided with the appropriate test booklet. All student verbalization was recorded to be marked later by the test markers.

Observational Data

All observational data were gathered by the investigator. On the Friday prior to the first week of observation for any given teacher, the recording apparatus was installed in the classroom. This equipment consisted of the following: a Sony TC 105 audio tape recorder, a multi-channel mixer, and a varying number of microphones per classroom. The actual number of microphones which were suspended from the ceiling depended on the size and shape of the classroom. Once the microphones were mounted, they remained in place for the duration of the study. Personnel from the Audiovisual Media Centre of the Faculty of Education assisted the investigator in arranging and adjusting the recording mechanisms to provide the best possible

audiotaped records.

In addition to checking the audio equipment, the Friday permitted the investigator to become accustomed to the teacher's instructional style and to learn to identify the individual students. A seating plan which consisted of the names of the class members was given to the investigator to assist her in the identification of the students. While the class was engaged in oral activities, the investigator practiced coding the classroom verbal interaction. The practice session provided the further advantage of acclimatizing the teacher and the students to the presence of the observer.

On the following Monday for the duration of the week, the class was observed for one-half hour daily while engaged in the transpositional activities T2a to T4a of the Sketch of Lesson 17 of VIF. Observations were conducted as unobtrusively as possible. Armed with code sheets, freshly-sharpened pencils, and a stop watch, the investigator classified the categories of the VERBAL FUNCTION dimension and the individual students who verbalized while producing an audiotaped record of the session. The post-test of the Sketch was administered to the students after the observation on the Friday.

Since the following week would be used to present the Mechanism of Lesson 17, all recording equipment with the exception of the microphones was dismantled and removed from the classroom. The observer was not present in the classroom during the presentation of the Mechanism.

When the transposition of the Mechanism was undertaken in the succeeding week, the investigator returned to observe the classroom

verbal interaction. The identical procedure used to collect observational data during the Sketch was employed for the Mechanism.

All direct observation occurred from the middle of October until the same time in December, 1974. The classification of the categories of the CONTENT and THOUGHT dimensions from the audiotaped records began in 1975. Each audiotape was replayed as often as necessary in order to substantiate the timing sequences by means of a stop watch, confirm the accuracy of the VERBAL FUNCTIONS and the student identification codes, and add the appropriate substantive and cognitive categorization. Depending on its difficulty, a one-half hour audiotape could take anywhere from one and one-half hours to more than six hours to classify and verify.

In order to ensure coding accuracy as much as possible, the following procedure was employed. Based on the impression about the classroom substantive and cognitive verbal transactions originating from the direct observation, the difficulty of classifying these two dimensions for each teacher served to indicate the order in which they would be analyzed. By beginning with the teacher whose interactive patterns appeared most consistent and predictable over all ten hours of observation, it was felt that the classifications would be most precise. Consequently, the audiotapes of teacher C were coded first, followed by teachers D, A, and B in the given order, respectively. Furthermore, all ten one hour audiotapes, containing the verbal interaction of classes 1 and 2 for each teacher, were classified sequentially. This procedure served to sustain the sequence of the daily interactions in addition to highlighting differ-

ences between classes for any given instructional activity. Extensive

notes were kept on each teacher to assist the coding precision.

The categorization of the classroom interaction according to

the CONTENT and THOUGHT categories was considerably more taxing

mentally than was the direct classroom observation. Whereas the investi-

gator could directly classify verbalization for a one-half hour period

with relative ease, she found it considerably more onerous to categorize

substance and cognition. Passages which were particularly difficult

required extensive review to ensure correct classification. Not only

was it necessary to maintain the continuity of the immediately

preceding transactional categorizations, but also the overall tenor of

the instructional activities had to be maintained. In consequence,

many of the audiotapes were examined again on subsequent days.

Especially complex transactions were transcribed and analyzed. The

investigator exercised every precaution to guard against erroneous

classification by continuously monitoring the audiotapes. This

painstaking procedure appeared to result in accurate and reliable

categorizations of the verbal interaction. (The next section examines

the procedures and coefficients associated with the maintenance of

inter- and intra-rater reliability.) Since it was often possible to

code less than one hour of recorded classroom interaction daily given

the difficulty of maintaining a mentally-alert disposition toward

the task, the classification of the forty hours was not completed

until the end of the summer.

RELIABILITY MAINTENANCE

In a study which relies heavily on the collection of data by people, some indication of the durability of the skills associated with the classification of the data is required in addition to the originally quantified abilities of the personnel. Since the time line of the present study was fairly protracted, especially with respect to the observational data, it was necessary to provide some method of maintaining both inter- and intra-rater reliability. The procedures and reliability coefficients for the achievement test markers and the observers over the duration of the investigation are reported in turn.

Achievement Test Markers

A description of the method of training the achievement test markers and the resultant reliability measures was provided in Chapter V. This section serves to examine the means of sustaining their assessment skills. While it was the investigator who originally trained the three test markers, she was absent from the actual evaluation of the tests for the reasons outlined in the section on data collection (pp. 120-121). Her role was solely that of arbiter in cases of dispute.

The following procedure of maintaining agreement among the markers on classifying the student test verbalization was under-taken. In order to facilitate the rating of the tests, a two-stage approach was employed. All Question-Answer sections for any teacher were graded first, which usually accounted for an entire marking session, followed by assessing the Description and Résumé sections

on subsequent days. This procedure permitted the markers to maintain the proper mental set required to classify the essentially different kinds of student discourse. The reader is referred to Appendix D for a description of the criteria on which the marking was based. Each marking session began by having all three markers independently score two or three identical tests followed by a discussion of their evaluations. Since the recorded test verbalization of every student was transcribed, grading discrepancies were readily identified. Furthermore, each marker reappraised a couple of her own tests on subsequent occasions to provide a measure of intra-rater reliability. If a marker was unable to classify a particular verbalization according to the predetermined criteria, she discussed it with the other two markers. In the event that no consensus of opinion could be reached, the investigator reviewed the audiotape and made a final decision based on consultation with the markers.

Since the achievement data for the classes of a particular teacher were gathered when they were engaged in the Sketch and Mechanism of Lesson 17, the actual tests (Sketch-Forms A and B, Mechanism) which were rated were rotated constantly, thereby assisting the markers in maintaining objectivity about the verbalization of the students. Moreover, the chance that all three test forms for any individual student would be graded by the same marker was remote, serving as a further aid to impartial evaluation.

Randomly-selected inter- and intra-rater evaluations which were collected according to the procedure described above were submitted to a statistical analysis to determine the degree of

association between the grade assignments of the three markers.
Examples of both inter- and intra-rater reliability coefficients
for each test form are presented in Table 23. The generally high
correlation coefficients indicate that the method used to maintain
marker reliability outlined above was successful.

Observers

It had originally been anticipated that the observational
data would be classified by both observers. However, due to the
delay in conducting the study proper until the fall term, all data
were collected and classified by the principal observer. Although
the second observer returned to regular classroom instruction, she
made herself available for consultation and reliability assessment
throughout the remainder of the observational data collection period.

While the training program employed to produce competent
coders of classroom verbal interaction by means of the L2 System was
described in Chapter III, this portion of the report outlines the
procedures used to maintain observer agreement over the duration of
the study. Since the collection of the observational data involved
two distinct stages, a similar approach was used in verifying the
accuracy of the verbal classifications in each stage.

During the collection of data by means of direct observation
in the fall of 1974, the principal observer met frequently with the
second observer to discuss the verbal interaction patterns encountered
in the classrooms. In order to provide some indication of the
consistency between observers with respect to direct coding, reliability
checks on continuous audiotaped recordings were taken for all four

Table 23

Pearson Product-Moment Correlation Coefficients of Test Marker
Reliability Over the Duration of the Study

| | Sketch | | | | | | Mechanism | | |
| | Form A | | | Form B | | | | | |
Marker	1	2	3	1	2	3	1	2	3
1	.99			.93			.91		
2	.96	.98		.97	.93		.95	.97	
3	.98	.96	.98	.92	.94	.80	.94	.90	.99

teachers when each was initially observed. Each test was based
on reclassifying approximately fifteen minutes of the recorded
verbalization. Scott's Reliability Coefficient, recommended by
Flanders as an appropriate measure of agreement between observers
on direct classification (Flanders, 1966, p. 13) was used for this
analysis and found to range from 0.88 to 0.91. Discrepancies were
examined and found to be attributable largely to differences in
coding speed.

Once the classification of verbalization by means of the
CONTENT and THOUGHT dimensions began in 1975, the principal observer
continued to meet regularly with the second observer in order to
discuss the verbal interactive patterns. Despite the fact that the
principal observer actually collected and classified the data
according to the procedure outlined previously (pp. 123-125), it was
felt necessary to maintain an outside link with the second observer.
In addition to sound research practice, this collaboration provided
certain advantages. By discussing specific interactive sequences
with another trained observer, the investigator was forced to justify
her classification in the event of disagreement. Such deliberation
often served to clarify the reasoning behind a particular classifi-
cation. The consultation further provided a second judgment about the
interpretation of especially difficult passages which assisted the
principal observer in maintaining rater objectivity. Moreover, the
conversations with the second observer aided the investigator in
sustaining interest in categorizing verbalization by dissipating
the feelings of frustration experienced when classifying particularly

complicated verbal transactions.

The specific intra-rater reliability procedure used is described below. During the categorization of the Mechanism tapes for each teacher, approximately fifteen minutes of the verbal inter-action of one of the Sketch tapes was reclassified by the principal observer. At the conclusion of the coding period, another fifteen minute episode of each teacher's verbal interaction was reclassified. In order to expedite the reliability checks, only categories of the CONTENT and THOUGHT dimensions were submitted to statistical analysis. Since the investigator had been found to be almost completely accurate on VERBAL FUNCTIONS when precisely-timed reliability checks were undertaken (Table 6, p. 69), the functional code for each particular event was enumerated. On a subsequent occasion, the investigator could add the substantive and cognitive classifications to the events. No time limit was set on any such reliability test. The Pearson Product-Moment Correlation Coefficients which were calculated in this manner on the reliability checks taken at the conclusion of the coding period are reported in Table 24 which also indicates the number of tallies on which the correlations are based. The high reliability coefficients reflect the hundreds of hours spent by the investigator in classifying verbal interaction.

In addition to the intra-observer reliability checks, selected fifteen minute episodes for each teacher were classified by both the principal observer and second observer to provide some indication of the maintenance of inter-observer reliability. The same procedure detailed above was employed. The coefficients reported in Table 25

Table 24

Pearson Product-Moment Correlation Coefficients of Intra-Observer
Reliability for the Investigator Over the Duration of the Study

Teacher	CONTENT	THOUGHT	N*
A	.98	.98	304
B	.99	1.00	295
C	.99	.98	293
D	.97	.98	289

*Tallies in reliability check.

Table 25

Pearson Product-Moment Correlation Coefficients of Inter-Observer
Reliability Over the Duration of the Study

Teacher	CONTENT	THOUGHT	N*
A	.90	.96	236
B	.93	.96	351
C	.95	.98	403
D	.95	.96	197

*Tallies in reliability check.

were found to be indicative of satisfactory reliability. It was

expected that these inter-observer reliability coefficients would not

be as high as the intra-observer checks for the investigator since

the second observer did not have the same extensive experience in

classifying verbal interaction as did the principal observer. However,

the reliability coefficients indicate that once an observer has been

trained to a high degree of accuracy using the L2 System, verbal

interaction can still be coded with considerable reliability even

after a period of abstinence.

PREPARING THE DATA FOR ANALYSIS

Once the data had been collected, it was necessary to transform

them into a form which the computer could handle. Two research

assistants were engaged to execute this undertaking. Little manual

alteration was required for the criterion measures. Names were omitted

from the data and all students were identified by their classroom

identification codes with a preceding superscript which indicated their

class membership.

Considerable labor was required to transform the observational

data. Not only was it necessary to manipulate the actual classification

codes, but it was also essential to preserve the sequence of the

classifications. For example, the ten audiotapes, each of which re-

presented one-half hour of transposition for each of the eight classes,

needed to be identified not only by a sequence number (1 to 10), but

also by the order of every transaction. Consequently, the following

six digit triple classification code was employed to identify every

individual card of data:

DIGIT

1   Class (1-8)

2-3   Half hour of instruction (1-10)

4-6   Sequence number* of the data cards

Each observational data card, identified in the above manner, contained ten coded events, each of which required the following seven digit quadruple classification:

DIGIT

1-3   Identification code (100-999)

4   CONTENT category (1-7)

5   THOUGHT category (1-5)

6   VERBAL FUNCTION category (1-24)

Teachers were identified as 100 to 800, silence as 999, and individual students by their identification codes plus a preceding class superscript 111, 211, etc. In order to minimize the frequency of zero's, both CONTENT and THOUGHT categories were increased by one for the classification, i.e., 1 to 7 and 1 to 5, respectively. Since VERBAL FUNCTION categories consisted of a numeric and a substantive descriptor, the transformation required adjusting them to numeric equivalents only, i.e., 1 to 24. The following example serves to illustrate a possible series of verbal transactions:

_____

*The total number of cards for any one class ranged from 660 to 830. The observational data generated over 6,000 cards.

	C	T	VF
200 5 2 07	4	1	4
242 5 2 18	4	1	8-42
200 1 1 02	0	0	2
999 1 1 24			10*

This rather laborious transformational procedure was necessitated by the desired analyses. In order to identify the teacher solicitation and reinforcement for each individual student, it was necessary to preserve the actual order of the interactions.

Initially the two research assistants were instructed in the computer numeric equivalents of the observational data classifications. After a preliminary training and practice session in which the investigator satisfied herself that they were correctly transposing the observational data into computer code, they began the task. Periodic spot checks were undertaken as well. Moreover, a computer program was written to test the accuracy of the ranges of numbers for any given classification. For example, if a teacher identification code (100 to 800) occurred with a student VERBAL FUNCTION (18 to 24), the computer would print an error message indicating the type of mistake and the card on which it was located. In this manner, it was possible to correct any errors which occurred.

Once the observational data had been manipulated in the above manner to permit the desired analyses, they were submitted to the computer programs which were developed especially for the present

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*By definition VERBAL FUNCTION 10 (non-verbal activity) includes no substantive or cognitive qualification.

study by the staff of the Division of Educational Research Services at the University of Alberta.

SUMMARY

This chapter has presented the procedures employed in this study to select the sample, collect the data, and prepare them for analysis. Furthermore, since the majority of the data were gathered by people who required special skills in order to decode the information, the chapter described the methods of maintaining both test marker and observer reliability and presented the coefficients which were calculated.

CHAPTER VII

DESCRIPTIVE RESULTS

OVERVIEW

This results chapter is divided into four major sections. The first section examines and reports the temporal differences in the pace of instruction for the four teachers and their classes. Included in the second section are the percentage distributions of teacher and student verbalization among the categories of the substantive, cognitive, and functional dimensions of the L2 system. A synopsis condenses the major findings. The third section identifies the predominant teacher solicitation and reinforcement strategies and their functional relationship with student verbalization. These results are also summarized in a synopsis. The final section presents the aptitude, attitude, and achievement criterion measures for the students. Concluding the chapter is a summary of the specific observational variables which are representative over classes and time and are correlated with student criteria.

PACE OF INSTRUCTION

This section examines the frequency distributions of the events which were coded for each class during the Sketch and the Mechanism in order to indicate differences in the actual rate of incidents occurring during the given time periods. Such examination serves to establish the pace of instruction for the classes.

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Question 1. What is the distribution of the rate of instruction for each class during the Sketch and the Mechanism?

Table 26 presents the frequency distribution of all coded events and the estimated number of events per minute of instruction for each class during the Sketch and the Mechanism. If one event occurred every three seconds, then the rate of instruction would be twenty events per minute or approximately 3,000 in the two and one-half hour observational periods which constitute both the Sketch and the Mechanism. Examination of the table indicates that the rate of instruction in all classes proceeded more quickly than the three second interval. All classes demonstrated consistency of pace over time. The slowest pace was found in the classes of teacher A in which approximately 21 to 23 events occurred per minute of instruction while the fastest rate occurred for the classes of teacher B in which approximately 31 to 33 events transpired per minute of instruction. This finding is important in that it demonstrates that in teacher A's classes speakers, both teacher and students, tended to verbalize beyond the three second interval necessitating a further code of the same category. Generally events occurred somewhat more slowly for teacher A since time coding, i.e., three second interval, was the predominant form used in his classes while event coding tended to be adopted in the classes of the other three teachers. The estimated time rate for all classes of teacher A ranged from one event every 2.6 to 2.8 seconds while for teacher B it varied from 1.8 to 1.9 seconds. Although these rates are estimated on the basis of the total number of events, they serve to clarify somewhat the

Table 26

Frequency Distribution of all Coded Events and the Estimated Number of
Events Per Minute of Instruction for Each Class During the
Sketch and the Mechanism

Teacher	Class	Sketch		Mechanism	
		f	Events/min	f	Events/min
A	A1	3358	23	3261	22
	A2	3367	23	3192	21
B	B1	4188	33	4069	31
	B2	4067	31	4089	31
C	C1	3939	29	3788	27
	C2	3800	27	3822	27
D	D1	3740	27	3983	30
	D2	3831	28	3963	29
Aggregate		30,290	27	30,167	27

actual temporal distribution of classroom verbalization.

Table 27 presents the means, standard deviations, and ranges of the total verbal participation for each class. Generally, the average frequency of participation tended to be similar for both classes for each teacher during the Sketch and the Mechanism although some differences did occur. In all classes the ranges were extremely wide which resulted in the high standard deviations indicating that all students did not verbalize to the same extent. When the average frequencies are translated into probable time equivalents, the means were found to range from 1.7 to 2.8 minutes.* However, the ranges indicate that an average amount of student participation for any class does not really exist. The most widespread difference in rate of participation was found for classes C1 and C2 which were also the largest classes. The variation in verbalization was found to be the smallest in class D2. These results suggest that the size of the class might influence the strategies which a teacher employs in eliciting student verbalization. Generally, it appears that the smaller the class, the more obvious is the presence of each student while the larger the class, the more anonymous the student may become. The effect of differences in participation will become evident in the correlations calculated between participation and student criteria.

DISTRIBUTION OF TEACHER AND STUDENT VERBALIZATION

While the preceding section has examined the differences in

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*The reader is referred to Table 8 on p.83 for the procedure used to estimate the pace and rate of coded events per minute of instruction.

Table 27

Means, Standard Deviations, and Ranges of the Frequency and
Estimated Time Equivalents of Individual Student
Verbalization in Each Class During the Sketch
and the Mechanism

| Class | N | Unit | frequency | | | Estimated time (min) | |
			$\overline{X}$	s	Range	$\overline{X}$	Range
A1	24	S	50.13	30.21	12 - 152	2.2	.5 - 6.6
		M	56.42	29.49	10 - 127	2.6	.5 - 5.8
A2	18	S	60.44	29.93	16 - 125	2.6	.7 - 5.4
		M	57.11	24.49	12 - 108	2.8	.6 - 5.1
B1	21	S	71.19	32.82	5 - 142	2.2	.2 - 4.3
		M	70.81	36.92	21 - 164	2.3	.7 - 5.3
B2	22	S	61.86	28.42	27 - 140	2.0	.9 - 4.5
		M	66.14	23.46	31 - 128	2.1	1.0 - 4.1
C1	30	S	60.77	56.13	1 - 210	2.1	.0 - 7.2
		M	56.83	55.30	5 - 215	2.1	.2 - 8.0
C2	27	S	65.48	44.14	0 - 169	2.4	.0 - 6.3
		M	65.00	51.26	5 - 274	2.4	.2 - 10.1
D1	24	S	48.04	20.92	8 - 83	1.8	.3 - 3.1
		M	52.04	25.31	20 - 112	1.7	.7 - 3.7
D2	19	S	61.68	23.86	31 - 112	2.2	1.1 - 4.0
		M	66.89	21.19	30 - 105	2.3	1.0 - 3.6
Aggregate	185	S	59.80	37.22	0 - 210	2.2	.0 - 7.8
		M	61.10	37.91	5 - 274	2.3	.2 - 10.1

rates of instruction for each class, this section identifies the
distribution of verbalization among the categories of each dimension
for each class. Since the rates are so disparate, percentages
are reported in this section for the global teacher-student distribu-
tions. Means and standard deviations are also reported for the
students to indicate the differences within classes of the actual
usage of the categories. The distributions for each dimension are
presented in turn.

CONTENT

Question 2. What is the distribution of teacher and student
verbalization among the categories in the CONTENT dimension for each
class during the Sketch and the Mechanism?

Table 28 presents the per cent distribution of teacher content
for each class during the Sketch and the Mechanism. Generally the
teachers' use of content categories remained stable over classes for
the Sketch and the Mechanism. A slight difference in distribution
occurred for teacher A from class A1 to A2 in the use of no discern-
ible content both for the Sketch (21.5 vs. 15.9 per cent) and the
Mechanism (23.5 vs. 17.2 per cent). Variation also occurred between
classes A1 and A2 for morphology (6.2 vs. 3.2 per cent) and vocabulary
(29.8 vs. 36.6 per cent) during the Mechanism. The category distribu-
tion between classes for each of the other three teachers varied less
than five per cent. These results suggest that the kind of content
used by the teacher over classes during the instruction of the same
unit tends to be fairly similar.

When teacher use of content over time is examined, differences

Table 28

Per Cent Distribution of Teacher Content for Each Class During the Sketch
and the Mechanism

Class	*No C.	Sketch							No C.	Mechanism					
		Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.		Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.	
A1	21.5	.9	12.0	12.0	42.9	9.2	1.5	23.5	.9	6.2	17.2	29.8	21.8	.6	
A2	15.9	.9	12.1	15.2	45.6	8.8	1.4	17.2	.4	3.2	17.0	36.6	24.6	.9	
B1	30.8	1.1	14.3	10.3	25.1	17.7	.8	30.6	1.5	9.2	31.4	17.2	9.2	.8	
B2	29.9	.7	11.3	10.5	26.9	20.1	.6	29.7	.6	8.3	30.8	18.3	11.0	1.3	
C1	44.7	1.0	22.4	7.4	12.3	10.3	1.9	50.3	.5	6.2	24.1	8.9	8.9	1.2	
C2	47.1	.8	21.2	5.5	12.2	11.9	1.5	45.7	.7	4.9	24.6	10.4	11.8	1.9	
D1	30.0	.7	23.9	13.8	18.7	10.9	2.0	33.8	.6	8.6	32.1	13.5	10.4	1.1	
D2	29.8	.4	25.9	11.1	20.0	11.6	1.2	29.4	.4	8.0	35.5	13.9	12.0	.8	
Aggregate	31.0	.8	18.0	10.8	25.4	12.7	1.3	32.4	.7	7.0	27.2	18.3	13.4	1.0	

*No C. = No discernible content, Phon. = Phonology, Morph. = Morphology, Syn. = Syntax, Vocab. = Vocabulary, Disc. = Discussion, Comm. = Commentary.

occurred in all categories with the exception of those associated with phonology and commentary. Neither of these two kinds of content was used extensively by any teacher for either unit of instruction indicating that they were not of primary concern during the transpositional phase. For all four teachers, the use of morphology decreased from the Sketch to the Mechanism while the use of syntax increased. With the exception of teacher B, the usage of structure (morphology and syntax) tended to remain fairly stable. Teacher B decreased the use of structure for both classes B1 and B2 as did teacher A for class A2 (27.3 to 20.2 per cent) while teacher D increased the use of structure for class D2 (37.0 to 43.5 per cent). Emphasis on vocabulary consistently decreased from the Sketch to the Mechanism for all eight classes. The incidence of discussion remained fairly stable for the classes of teachers C and D while increasing for classes A1 (9.2 to 21.8 per cent) and A2 (8.8 to 24.6 per cent) and decreasing for classes B1 (17.7 to 9.2 per cent) and B2 (20.1 to 11.0 per cent).

For both the Sketch and the Mechanism, considerable variation between teachers occurred for all categories with the exception of phonology and commentary. The greatest discrepancy was found for vocabulary both for the Sketch (12.2 to 45.6 per cent) and the Mechanism (8.9 to 36.6 per cent). These results would tend to suggest that the content of the lesson varies from one unit to the next and that the L2 System is capable of identifying these differences. The finding that the majority of verbalization occurs according to the linguistic categorizations reflects the emphasis placed on these skills during transposition. Since all teachers did not use the same

proportion of content classification although all instructed the identical material appears to indicate that the kind of content used tends to be independent of the substance of the lessons. Despite the utilization of common materials, the teachers structured the content in different ways. The use of unspecified content varied substantially across teachers both for the Sketch (15.9 to 47.1 per cent) and the Mechanism (17.2 to 50.3 per cent). Usage of this categorization indicates that a sizeable proportion of teacher verbalization is functional but lacks substantive qualification when classified according to the L2 System.*

Table 29 presents the per cent distribution of student content for each class during the Sketch and the Mechanism. While the use of unspecified content figured prominently in the distribution of teacher verbalization, a similar pattern was not found for the students. Verbalization across classes in which content was indiscernible ranged from 2.7 to 8.5 per cent during the Sketch and 3.3 to 10.3 per cent during the Mechanism. Differences in the distribution of discussion between classes A1 and A2 were found for both the Sketch (44.4 vs. 31.1 per cent) and the Mechanism (64.6 vs. 55.2 per cent) and between classes C1 and C2 during the Sketch (20.4 vs. 27.4 per cent). No other noteworthy distinctions between classes occurred for either time. As was noted for the teachers, little use of phonology or commentary was found.

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*For example, calling on a student by name only serves a functional purpose, i.e., question (004), yet does not indicate the substantive (or cognitive) nature of the query.

Table 29

Per Cent Distribution of Student Content for Each Class During the Sketch
and the Mechanism

Class	Sketch							Mechanism						
	*No C.	Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.	No C.	Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.
A1	2.7	.8	10.2	11.3	28.2	44.4	2.3	4.1	1.0	4.5	11.9	13.5	64.6	.4
A2	3.9	1.0	13.6	14.9	33.6	31.1	1.9	6.1	.8	3.4	15.0	18.5	55.2	1.0
B1	5.5	1.3	20.7	17.8	27.2	25.5	1.9	3.7	1.3	11.0	45.1	15.2	21.8	1.9
B2	8.5	1.0	17.9	15.9	26.6	28.5	1.5	5.3	.6	9.4	46.9	14.6	20.8	2.3
C1	2.0	1.0	43.5	15.6	13.3	20.4	4.2	3.3	.5	11.1	47.9	10.0	22.9	4.2
C2	2.2	.8	41.4	11.5	13.5	27.4	3.2	5.4	1.0	8.9	47.6	10.0	22.9	4.3
D1	2.7	1.2	31.8	20.0	19.8	20.9	3.6	7.3	.7	10.6	45.4	11.5	22.2	2.3
D2	6.3	.5	33.4	17.2	22.1	16.8	3.7	10.3	.7	8.8	45.1	11.7	22.2	1.2
Aggregate	4.1	1.0	28.1	15.4	22.1	26.5	2.9	5.5	.8	8.7	39.5	12.8	30.3	2.4

*No C. = No discernible content, Phon. = Phonology, Morph. = Morphology, Syn. = Syntax, Vocab. = Vocabulary,
Disc. = Discussion, Comm. = Commentary.

Only the use of morphology decreased over all classes from the Sketch to the Mechanism. No other consistent results were found over time for the classes. While the use of syntax increased considerably for the classes of teachers B, C, and D, it remained stable for the classes of teacher A. The examination of structure (morphology and syntax) over time exhibited considerable variation over classes: a decrease for classes A1 and A2, an increase for classes B1 and B2, and little change for classes C1, C2, D1, and D2. The use of vocabulary decreased for all classes with the exception of C1 and C2. Discussion increased for classes A1, A2, and D2, while decreasing for class B2 and remaining fairly stable for classes B1, C1, C2, and D1. These rather disparate results indicate that student content distribution over class and time for teachers may be a consequence of the particular group of learners and their apparent needs. Examination of the variation in each class on the categories appears warranted from these results.

Table 30 presents the means and standard deviations of the frequencies of student content categorizations for each class during the Sketch and the Mechanism. With the exception of a few variables for the different classes, the standard deviations tended to be so highly similar to the means that normal distributions cannot be attributed to the verbalization associated with the categorization. This finding that the distributions are skewed is not unexpected given the instructional conditions prevalent in the classroom. Although a teacher has a specific kind of solicitation in mind, the reaction which he produces depends on the verbalization produced by

Table 30

Means and Standard Deviations of the Frequencies of Student Content Categorizations
for Each Class During the Sketch and the Mechanism

Class	N		*No C.	Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.	No C.	Phon.	Morph.	Syn.	Vocab.	Disc.	Comm.
					Sketch							Mechanism				
A1	24	$\overline{X}$	1.38	.42	5.13	5.67	14.13	22.25	1.17	2.29	.58	2.54	6.71	7.63	36.46	.21
		s	2.02	.91	5.21	6.48	11.64	9.90	1.37	2.54	1.15	2.86	5.41	7.63	16.55	.50
A2	18	$\overline{X}$	2.33	.61	8.17	9.00	20.33	18.83	1.17	3.50	.44	1.94	8.61	10.44	31.61	.56
		s	2.47	.83	5.27	8.00	14.56	7.90	1.12	2.81	.68	1.65	5.53	6.59	16.31	1.01
B1	21	$\overline{X}$	3.86	.95	14.76	12.71	19.29	18.29	1.33	2.48	.90	7.67	32.24	10.57	15.62	1.33
		s	2.61	1.13	9.03	6.50	8.44	14.18	2.12	3.03	1.15	4.27	12.99	7.10	16.73	2.21
B2	22	$\overline{X}$	5.14	.64	11.09	9.91	16.41	17.73	.95	3.41	.41	6.23	31.18	9.50	13.86	1.55
		s	5.07	.77	6.35	4.56	9.75	14.24	1.15	2.98	.65	3.58	9.20	5.97	13.69	1.64
C1	30	$\overline{X}$	1.20	.63	26.43	9.47	8.03	12.43	2.57	1.77	.30	6.33	27.30	5.70	13.07	2.37
		s	1.42	.91	23.01	11.14	7.99	13.74	4.73	1.93	.69	6.86	23.06	7.24	17.58	4.18
C2	27	$\overline{X}$	1.44	.56	27.07	7.56	8.85	17.93	2.07	3.48	.63	5.78	30.93	6.52	14.89	2.78
		s	2.23	.99	18.88	7.41	7.48	11.89	2.62	4.65	.82	6.10	21.65	6.96	14.94	2.75
D1	24	$\overline{X}$	1.29	.58	15.25	9.63	9.50	10.04	1.75	3.79	.38	5.50	23.63	6.00	11.54	1.21
		s	1.24	1.04	6.66	5.41	4.01	10.96	2.15	3.81	.70	3.76	10.87	4.64	9.99	1.91
D2	19	$\overline{X}$	3.89	.32	20.63	10.58	13.63	10.37	2.26	6.79	.47	5.89	30.26	7.79	14.89	.79
		s	3.08	.57	5.77	5.69	5.66	10.83	2.22	4.12	.60	3.55	8.37	4.99	8.83	1.06
Aggregate	185	$\overline{X}$	2.43	.59	16.79	9.21	13.18	15.90	1.71	3.31	.51	5.32	24.19	7.79	18.55	1.44
		s	3.03	.93	15.13	7.61	10.04	12.72	2.66	3.60	.85	4.92	17.37	6.78	17.19	2.50

*No C. = No discernible content, Phon. = Phonology, Morph. = Morphology, Syn. = Syntax, Vocab. = Vocabulary
Disc. = Discussion, Comm. = Commentary.

the students. If a student makes a morphological error in a syntactic
question, the teacher will usually address himself to the morphologi-
cal mistake thereby changing the emphasis of susbequent solicitations.
The continuing interaction between teacher and students will depend
on the kinds of verbalization produced by the students. As all
students do not make the same kinds of errors, one could therefore
not expect all students to produce the same amount of any given
content verbalization. However, the resemblance to a normal distrib-
ution for any given category indicates that the teacher emphasized
that particular type of content classification for all students,
suggesting a contextual strategy employed by the teacher. During
the Sketch, teacher D tended to emphasize morphology for both class
D1 ($\overline{X}$ = 15.25; s = 6.66) and class D2 ($\overline{X}$ = 20.63; s = 5.77) while
during the Mechanism syntax was emphasized for both clases D1 ($\overline{X}$ =
23.63; s = 10.87) and class D2 ($\overline{X}$ = 30.26; s = 8.37). Similar results
were found for syntax both during the Sketch and the Mechanism for the
classes instructed by teacher B. Fairly normal distributions were
also found for classes A1 and A2 on discussion over time. This
finding does not mean that generally teachers do not employ specific
content strategies, merely that whether or not the emphasis is
apparent in the distribution depends primarily on the composition of
the class, i.e., the learners and their needs. Class size appears
to be a factor which confounds the results in that the larger the
class, the more difficult it is to involve all students, thereby
increasing the standard deviations, even though strategically the
teacher may be highly consistent.

The results of the preceding three tables have indicated that more variation in student usage of content categorizations occurred. This finding is apparently due to the heterogeneity of the students in the classes. While teacher distributions tended to be fairly consistent over class, with uniform variations over time, a parallel pattern was not found for the students. Examination of the distributions within each class on the content categories indicated wide diversity in content verbalization for the students.

THOUGHT

Question 3. What is the distribution of teacher and student verbalization among the categories in the THOUGHT dimension for each class during the Sketch and the Mechanism?

Table 31 presents the per cent distributions of teacher thought for each class during the Sketch and the Mechanism. The distributions of indiscernible thought are almost identical to those found for indiscernible content indicating that these two categories generally occur together. Examples of the most common unspecified verbal functions for teachers are très bien (002), encore, repétéz (006), or calling upon a student by name only (004 or 006). The use of knowledge accounted for the greatest amount of teacher talk for all teachers with ranges of 43.3 to 77.1 per cent for the Sketch and 42.0 and 67.9 per cent for the Mechanism with the exception of class C2 during the Sketch (47.0 per cent) and class C1 during the Mechanism (50.2 per cent). The use of no thought, knowledge, and comprehension tended to remain stable for all classes over time with the exception of class A2 in which knowledge decreased (77.1 to 67.9

Table 31

Per Cent Distribution of Teacher Thought for Each Class During the
Sketch and the Mechanism

Class	Sketch					Mechanism				
	*No T.	Know.	Comp.	App.	HMP	No T.	Know.	Comp.	App.	HMP
A1	21.3	67.8	9.7	.7	.5	23.5	63.3	11.8	1.4	.1
A2	15.8	77.1	6.4	.5	.1	17.1	67.9	13.2	1.4	.4
B1	30.5	51.4	15.6	2.5	.0	30.4	56.4	10.4	2.8	.0
B2	29.2	51.6	15.9	1.3	2.0	29.4	54.0	13.4	3.2	.0
C1	44.7	47.1	4.8	3.2	.3	50.2	42.0	6.1	.2	1.4
C2	47.0	43.3	7.4	1.5	.7	45.6	46.3	5.8	1.0	1.3
D1	30.0	58.9	7.5	3.6	.0	33.5	59.3	6.2	.2	.8
D2	29.8	58.9	8.8	2.6	.0	29.3	62.9	6.5	.8	.6
Aggregate	30.8	57.1	9.6	2.0	.4	32.1	56.7	9.1	1.4	.6

*No T. = No discernible thought, Know. = Knowledge, Comp. = Comprehension, App. = Application, HMP = Higher
Mental Processes.

per cent) and comprehension increased (6.4 to 13.3 per cent). No

consistent pattern was found over the eight classes for the use of

application and higher mental processes, although neither of these

cognitive classifications was used to any extent by any teacher.

During the Sketch, teacher B used more higher mental processes in

class B2 than in class B1 (2.0 vs. 0.0 per cent). These results

indicate that generally teachers verbalize at the managerial level

(indiscernible content and thought) or at the knowledge level.

This finding would be anticipated since teachers tend either to

ask questions in which the name of the student to whom the query is

addressed is often the only teacher verbalization (004) or to provide

information which tends to be classified as knowledge to the students.

More diversity of comprehension was found for the Sketch (6.4 vs.

15.9 per cent) than for the Mechanism (0.2 to 3.2 per cent).

Table 32 presents the per cent distribution of student thought

for each class. As was found for the teachers, the use of indiscern-

ible thought tended to be equivalent to indiscernible content for

the students in all eight classes. The most common examples of

unspecified student verbalization included oui, non (008), and

pardon? (009q). Considerable variation in the use of cognitive levels

occurred between classes for teachers. Classes A1 and A2 tended to

have different distributions in the use of knowledge both for the

Sketch (51.4 vs. 63.6 per cent) and the Mechanism (36.4 vs. 45.8 per

cent), higher mental processes for the Sketch (9.1 vs. 1.5 per cent)

and the Mechanism (9.2 vs. 3.0 per cent), and application for the

Mechanism (44.8 vs. 38.4 per cent). Whereas the use of application

Table 32

Per Cent Distribution of Student Thought for Each Class During the Sketch and
the Mechanism

Class	Sketch					Mechanism				
	*No T.	Know.	Comp.	App.	HMP	No T.	Know.	Comp.	App.	HMP
A1	2.1	51.4	7.0	30.5	9.1	3.5	36.4	6.1	44.8	9.2
A2	3.4	63.6	5.6	25.9	1.5	5.6	45.8	7.2	38.4	3.0
B1	4.6	66.2	23.3	5.9	.0	2.8	71.7	9.3	16.2	.0
B2	6.6	61.0	16.3	11.3	4.8	4.1	71.3	9.3	15.2	.1
C1	1.6	75.2	8.9	14.0	.3	3.0	75.5	10.1	1.6	9.7
C2	1.6	76.0	8.5	13.2	.7	4.6	78.5	7.1	3.1	6.7
D1	2.6	76.6	6.8	14.0	.0	6.4	73.8	5.5	.3	13.9
D2	6.1	77.4	9.3	7.3	.0	10.0	68.8	4.8	.9	15.5
Aggregate	3.4	69.0	11.0	14.7	1.9	4.8	66.6	7.6	13.8	7.2

*No T. = No discernible thought, Know. = Knowledge, Comp. = Comprehension, App. = Application, HMP = Higher Mental Processes.

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and H.M.P. combined tended to be similar for classes A1 and A2 during the Sketch (39.6 vs. 37.4 per cent), class A1 produced considerably more higher cognitive level verbalization during the Mechanism (54.0 vs. 41.4 per cent). Classes B1 and B2 tended to have different distributions during the Sketch on comprehension (23.3 vs. 16.3 per cent), application (5.9 vs. 11.3 per cent), and H.M.P. (0.0 vs. 4.8 per cent). During the Mechanism, discrepancies in cognitive distributions between classes B1 and B2 disappeared entirely. While classes D1 and D2 differed somewhat in the use of unspecified thought (2.6 vs. 6.1 per cent) and application (14.0 vs. 7.3 per cent) during the Sketch, little distinction in distribution was found during the Mechanism. Only classes C1 and C2 tended to have equivalent distributions on all cognitive categories for both time units.

No uniform patterns were found over all eight classes in the dispersion of verbalization from the Sketch to the Mechanism. The use of knowledge decreased over time for classes A1, A2, and D2, increased for classes B1 and B2, and remained fairly stable for classes C1, C2, and D1. Although the use of comprehension tended to remain similar for the classes of teachers A, C, and D, it decreased for the classes of teacher B. For both teachers C and D use of the application category decreased while H.M.P. increased. However, the combination of application and H.M.P. tended to be analogous for these classes over time with the exception of class D2 in which an increase occurred (7.3 to 16.4 per cent). The use of application increased for the classes of teachers A and B,

while remaining parallel for H.M.P. except for class B2 in which use of the latter decreased (4.8 to 0.1 per cent). When application and H.M.P. are combined, little change occurred over time for classes A2 and B2 although increasing for both classes A1 (39.6 to 54.0 per cent) and B1 (5.9 to 16.2 per cent). The lack of uniformity in patterns over time appears to be a consequence of the differences in the composition of the student body of the classes.

Table 33 presents the means and standard deviations of the frequencies of student cognitive categorizations for each class during the Sketch and the Mechanism. As was noted for Table 30 substantial variation among classes occurred on most variables. The classes of teachers B and D tended to approximate the normal distribution on the use of knowledge for both the Sketch and the Mechanism while classes A1 and A2 tended to have fairly normal distributions on the use of application for both time units. It was found that the content category of discussion also tended to be fairly normally distributed for classes A1 and A2. Teacher A tended to have all students in his classes produce résumés which are classified as divergent application discussion (539). This strategy accounted for the seemingly atypical patterns for classes A1 and A2.

While generally teachers employed a fairly high proportion of unspecified thought verbalization, students did not produce an analogous pattern. For both teachers and students, indiscernible thought tended to be highly congruent with indiscernible content suggesting that a certain proportion of all verbalization lacks

Table 33

Means and Standard Deviations of the Frequencies of Student Cognitive Categorizations for Each Class During the Sketch and the Mechanism

Class	N		Sketch					Mechanism				
			*No T.	Know.	Comp.	App.	HMP	No T.	Know.	Comp.	App.	HMP
A1	24	$\bar{X}$	1.04	25.75	3.50	15.29	4.54	1.96	20.54	3.46	25.25	5.21
		s	1.72	22.31	4.04	8.49	2.94	2.28	17.26	3.76	13.64	2.78
A2	18	$\bar{X}$	2.06	38.44	3.39	15.67	.89	3.22	26.06	4.11	22.00	1.72
		s	2.27	25.98	2.50	7.46	2.05	2.67	13.17	2.81	13.20	2.13
B1	21	$\bar{X}$	3.19	47.10	16.67	4.24	.00	1.86	50.81	6.57	11.57	.00
		s	2.32	19.54	14.12	5.31	.00	2.25	22.38	4.92	14.46	.00
B2	22	$\bar{X}$	3.95	37.73	10.14	7.05	3.00	2.59	47.23	6.14	10.14	.05
		s	3.90	16.25	8.89	8.47	4.68	3.08	13.70	5.67	12.28	.21
C1	30	$\bar{X}$	.93	45.73	5.40	8.53	.17	1.57	43.03	5.77	.93	5.53
		s	1.20	41.70	7.31	10.35	.64	1.54	40.06	9.83	1.55	7.68
C2	27	$\bar{X}$	1.07	49.74	5.56	8.63	.48	3.00	51.04	4.59	2.00	4.37
		s	1.86	35.87	4.98	7.34	.96	4.33	36.55	6.82	1.87	7.50
D1	24	$\bar{X}$	1.25	36.79	3.29	6.71	.00	3.33	38.42	2.88	.17	7.25
		s	1.99	13.75	3.16	10.17	.00	2.92	17.52	2.73	.55	8.52
D2	19	$\bar{X}$	3.74	47.74	5.74	4.47	.00	6.58	46.05	3.21	.63	10.42
		s	2.83	15.87	4.63	6.23	.00	4.25	12.98	4.31	1.56	6.19
Aggregate	185	$\bar{X}$	2.02	41.26	6.58	8.80	1.13	2.89	40.72	4.63	8.46	4.39
		s	2.55	27.99	8.23	9.19	2.63	3.34	27.52	6.02	13.05	6.54

*No T. = No discernible thought, Know. = Knowledge, Comp. = Comprehension, App. = Application, HMP = Higher Mental Processes.

both substance and thought in relation to the categories of the
L2 System. In general, teachers varied fairly substantially in
the employment of the cognitive categories as did the students.
Unspecified thought, knowledge, and comprehension tended to remain
stable over time for all teachers with the exception of class A2
in which the teacher decreased the use of knowledge while in-
creasing the use of comprehension. No consistent pattern was found
for the use of application and H.M.P. for the teachers. The dis-
tributions of student cognitive verbalization over time did not
produce any consistent patterns. These results indicate that
although the teacher's verbalization may appear similar, the
examination of student verbalization indicated wide variation in
the learners' implementation.

VERBAL FUNCTIONS

Question 4. What is the distribution of teacher and student
verbalization among the categories in the VERBAL FUNCTION dimension
for each class during the Sketch and the Mechanism?

Table 34 presents the per cent distribution of teacher
verbal functions for each class during the Sketch and the Mechanism.
Little use was made of feelings (1), divergent questions (4d),
teacher belief or opinion (5b), or behavioral criticism (7b) by
any teacher either during the Sketch or the Mechanism. The most
prevalent kind of verbal function used was found to be convergent
questions (4) for all teachers during the Sketch (18.8 to 41.5 per
cent) and the Mechanism (17.5 to 34.4 per cent) with the exception

Table 34

Per Cent Distribution of Teacher Verbal Functions for Each Class During the
Sketch and the Mechanism

Class	Unit	Feelings	Praise		Use of Ideas			Questions			Information				Direction		Criticism	
		1	2	2r	3	3c	3x	4	4d	4p	5	5b	5c	5p	6	6b	7	7b
A1	S	.2	13.5	7.1	5.5	1.8	.8	33.0	.0	1.3	16.4	.3	7.9	1.3	7.9	2.0	1.0	.1
	M	.1	14.7	4.6	6.4	1.6	2.3	29.4	.0	2.5	17.7	.3	7.7	1.6	8.4	1.9	.7	.0
A2	S	.0	10.3	7.8	5.9	1.1	.8	34.2	.1	3.0	19.0	.8	7.8	.4	5.2	2.6	.9	.0
	M	.1	9.6	6.0	6.7	1.5	1.0	31.2	.3	3.9	22.7	1.1	6.6	1.0	5.4	2.1	.8	.0
B1	S	.2	20.4	8.4	8.6	5.0	1.8	18.8	.2	5.9	8.7	.9	9.5	.4	9.5	.6	1.1	.0
	M	.2	18.4	12.4	7.1	2.5	.4	17.5	.0	3.3	9.3	.5	8.5	.7	15.1	1.6	2.5	.0
B2	S	.7	19.3	9.0	8.9	4.7	1.3	21.8	1.0	3.8	8.7	.6	8.1	.7	9.1	.8	1.5	.0
	M	.8	19.7	12.1	7.0	1.9	.5	19.5	.0	4.7	7.2	.7	8.0	.6	14.2	1.3	1.9	.0
C1	S	.0	21.4	1.3	2.2	1.1	.8	41.5	.1	4.4	10.0	.2	6.6	.3	8.7	.1	1.4	.0
	M	.2	21.4	1.2	2.9	1.7	.6	33.6	.0	5.4	6.6	.4	6.9	1.2	15.2	.3	2.5	.0
C2	S	.1	21.3	1.6	2.4	1.3	1.3	40.5	.0	2.7	10.5	.3	5.9	.4	9.7	.1	2.1	.0
	M	.2	17.2	1.8	4.0	1.7	.8	34.4	.3	4.7	9.2	1.0	6.4	1.1	14.2	.6	2.2	.2
D1	S	.1	19.1	8.4	5.7	1.5	1.2	27.5	.0	.2	15.1	.4	8.7	2.1	9.0	.3	1.0	.0
	M	.2	16.4	8.9	8.0	1.2	1.1	20.2	.0	2.2	13.3	.7	9.9	.4	14.2	.4	2.8	.1
D2	S	.3	17.3	9.2	5.6	1.0	.9	30.9	.2	.3	15.9	.3	8.2	1.9	6.4	.2	1.5	.0
	M	.4	15.2	10.4	5.3	1.2	1.2	25.7	.0	3.0	14.4	.3	11.2	.6	8.7	.4	1.9	.2
Aggregate	S	.2	17.9	6.8	5.7	2.2	1.1	30.6	.2	2.7	13.0	.5	7.9	1.0	8.2	.8	1.3	.0
	M	.3	16.6	7.5	6.0	1.7	1.0	25.9	.1	3.7	12.5	.6	8.3	.9	12.0	1.1	2.0	.1

of teacher B in class Bl in which praise tended to be slightly higher. Differences between classes for teachers tended to be negligible indicating that the verbal behaviors used represent instructional repertoire independently of contextual or cognitive aspects of teaching. Teacher verbal functions might also be some- what autonomous with respect to the composition of the class. Only one exception appeared in which student composition influenced the use of teacher verbal behavior. Teacher B initiated a dis- cussion on the role of women in society (544d) in both classes Bl and B2 during the Sketch. However only in class B2 was the issue pursued somewhat as indicated by the higher percentage of diver- gent questions (1.0 vs. 0.2 per cent).

Some changes did occur in the distribution of verbal functions over time for the teachers although they tended to be associated with both classes for each. Teachers B, C, and D tended to extend their use of verbal directions (6) at the expense of convergent questions (4) from the Sketch to the Mechanism with the exception of teacher B who decreased his use of both the clarification and extension of student ideas (3c and 3x). Teacher D also increased her personal questions (4p) from the Sketch to the Mechanism while lowering her procedural information for both classes. A slight increase in the extension of student ideas (3x) occurred for teacher A in class Al from the Sketch to the Mechanism (0.8 to 2.3 per cent).

In general, the variation among teacher categories of the VERBAL FUNCTION dimension did not occur to the same extent as was

found for the CONTENT and THOUGHT dimensions. These results appear
to suggest that teacher functional repertoire is a more stable
characteristic of teacher instructional behavior than are either
substantive or cognitive qualities. A possible explanation for
this finding might be that since the teachers were trained in the
use of Flanders ten categories their verbal behavior represents
a more invariant quality than do the other two dimensions. Perhaps
if teachers were trained in the use of levels of content and thought,
they would more readily control their behaviors on these dimensions
as well. However, since content and thought are categorized in the
same manner for both teachers and students by the L2 System, the
effect of the students' verbalization would still be evident which
it is not for verbal functions since they are distinct for teachers
and students.

Table 35 presents the per cent distribution of student
verbal functions for each class during the Sketch and the Mechanism.
Differences in the distributions of student verbal functions
occurred for all classes either during the Sketch or the Mechanism
or both. Class A1 produced more divergent response or comments
(9) than did class A2 for the Sketch (40.6 vs. 28.0 per cent) and
the Mechanism (55.6 vs. 43.2 per cent). Similarly, during the
Sketch class B1 produced less divergent verbalization than did
class B2 (11.2 vs. 19.5 per cent). Classes D1 and D2 also ver-
balized differently in terms of divergent behavior (14.0 vs. 8.0
per cent) during the Sketch. The opposite holds true for conver-
gent response (8) for these classes. During the Mechanism, the

Table 35

Per Cent Distribution of Student Verbal Functions for Each Class During the Sketch and the Mechanism

Class	Sketch						Mechanism					
	Convergent		Divergent				Convergent		Divergent			
	8	8q	9	9q	9c	9e	8	8q	9	9q	9c	9e
A1	52.2	4.0	40.6	2.6	.4	.2	39.1	2.4	55.6	1.8	.2	.8
A2	67.3	2.8	28.0	1.7	.0	.3	51.0	1.6	43.2	2.4	.7	1.2
B1	78.5	5.8	11.2	3.5	.4	.6	66.2	10.9	19.5	2.7	.4	.3
B2	71.6	5.4	19.5	2.5	.4	.5	66.1	14.0	17.3	1.4	.6	.5
C1	82.7	1.8	13.2	1.4	.7	.2	73.5	6.5	14.5	4.0	.8	.8
C2	83.2	1.0	12.8	1.2	1.2	.6	71.1	6.7	11.5	5.1	3.2	2.4
D1	75.6	8.1	14.0	1.9	.2	.2	69.7	10.4	17.8	1.0	.2	.9
D2	85.8	4.1	8.0	1.6	.2	.3	77.0	2.2	19.0	1.2	.1	.5
Aggregate	75.6	3.9	17.6	2.0	.5	.4	65.0	7.1	23.4	2.6	.9	1.0

use of convergent questions (8q) appeared considerably higher

for class D1 than D2 (10.4 vs. 2.2 per cent). However, convergent

response and questions together tended to be almost identical for

classes D1 and D2 (80.1 vs. 79.2 per cent). Some difference in

the use of student-to-student assistance (9c) occurred between

classes C1 and C2 during the Mechanism (0.8 vs. 3.2 per cent) as

did use of English (9e) (0.8 vs. 2.4 per cent).

In all eight classes, there was a decrease in the amount

of convergent response from the Sketch to the Mechanism. Classes

B1, B2, C1, and C2 all produced more convergent questions (8q)

during the Mechanism than they had during the Sketch. This finding

appears to be in keeping with the increase in the use of verbal

directions (6) by their teachers. The production of divergent

response (9) increased for class A1, A2, B1, and D2, while re-

maining fairly stable for the other four classes. Generally, the

use of divergent questions (9q), student-to-student assistance

(9c), and English (9e) tended to remain consistent over time with

the exception of class C2 in which the increase in the use of 9c

and 9e has already been mentioned. It is not surprising that less

frequency of occurrence would be attributed to these categories

since they are not under the control of the teacher. Those categor-

ies most directly influenced by the teacher (8, 8q, and 9) were

found to be employed most frequently by the classes.

With the exception of the classes instructed by teacher A,

the ranges in verbalization tended to be fairly narrow for both

convergent behavior during the Sketch (77.0 to 89.9 per cent) and

the Mechanism (77.1 to 80.0 per cent) and divergent behavior

during the Sketch (10.1 to 22.9 per cent) and the Mechanism

(19.8 to 22.9 per cent). Classes A1 and A2 consistently produced

more divergent behavior than any other class both during the

Sketch (43.8 and 30.0 per cent) and the Mechanism (58.4 and 47.5

per cent). This difference has been noted also for the CONTENT

and THOUGHT dimensions in which these two classes instructed by

teacher A tended to produce greater amounts of discussion and

application than did the other six classes. As was noted earlier,

this result may be due to teacher A's greater emphasis on the pro-

duction by the students in class of verbal résumés (539) and

descriptions (549).

Table 36 presents the means and standard deviations of the

frequencies of student verbal functions for each class during the

Sketch and the Mechanism. With the exception of the distributions

of convergent response (8) for classes B1, B2, D1, and D2, and

divergent response (9) for classes A1 and A2, little normality of

distribution was apparent. As has been indicated in the discussion

on the content and thought distributions the ranges in verbalization

in each category among the students within each class varied

considerably. Examination of the average total participation in

each class indicates that generally the amount of student verbaliza-

tion within classes remained stable with the exception of class A1

for which a slight increase occurred (50.13 to 56.42).

Table 36

Means and Standard Deviations of the Frequencies of Student Verbal Function Categorizations for Each Class During the Sketch and the Mechanism

Class	N		Sketch Convergent 8	8q	Sketch Divergent 9	9q	9c	9e	Total	Mechanism Convergent 8	8q	Mechanism Divergent 9	9q	9c	9e	Total
A1	24	$\bar{X}$	26.13	2.00	20.38	1.29	.21	.13	50.13	22.08	1.38	31.38	1.00	.13	.46	56.42
		s	21.43	2.47	8.86	2.75	.64	.33	30.21	19.03	1.91	14.60	1.29	.33	.87	29.49
A2	18	$\bar{X}$	40.67	1.67	16.94	1.00	.00	.17	60.44	29.06	.89	24.72	1.39	.39	.67	57.11
		s	26.76	2.40	8.17	1.15	.00	.37	29.93	13.18	1.59	14.61	1.42	.95	1.11	24.49
B1	21	$\bar{X}$	55.76	4.19	8.00	2.52	.29	.43	71.19	46.67	7.81	13.95	1.90	.29	.19	70.81
		s	23.79	2.82	8.53	4.27	.55	.95	32.82	22.50	4.55	14.92	3.49	.55	.50	36.92
B2	22	$\bar{X}$	44.27	3.36	12.09	1.55	.27	.32	61.86	43.59	9.32	11.50	.95	.41	.36	66.14
		s	20.71	3.21	11.35	1.72	.54	.87	28.42	15.20	5.47	13.20	1.58	1.11	.71	23.46
C1	30	$\bar{X}$	50.23	1.10	8.00	.87	.43	.13	60.77	41.73	3.70	8.23	2.30	.43	.43	56.83
		s	46.74	1.76	9.09	1.18	.84	.34	56.13	38.82	5.35	11.14	3.87	.84	.88	55.30
C2	27	$\bar{X}$	54.48	.63	8.41	.81	.78	.37	65.48	46.26	4.37	7.48	3.30	2.04	1.56	65.00
		s	38.28	.99	7.31	1.39	2.69	.73	44.14	31.58	3.82	8.42	4.38	6.78	2.20	51.26
D1	24	$\bar{X}$	36.33	3.88	6.75	.92	.08	.08	48.04	36.25	5.42	9.25	.54	.13	.46	52.04
		s	14.68	2.70	10.32	1.47	.28	.28	20.92	16.67	6.22	9.40	.82	.33	1.15	25.31
D2	19	$\bar{X}$	52.89	2.53	4.95	1.00	.11	.21	61.68	51.47	1.47	12.74	.79	.05	.37	66.89
		s	16.32	2.37	6.74	1.49	.45	.52	23.86	15.73	2.23	6.77	.77	.22	.81	21.19
Aggregate	185	$\bar{X}$	45.18	2.33	10.55	1.22	.30	.23	59.80	39.68	4.35	14.36	1.60	.52	.58	61.10
		s	31.03	2.68	10.21	2.20	1.17	.61	37.22	26.10	5.16	14.38	2.88	2.75	1.25	37.91

Synopsis

Since considerable detail about the distributions of teacher

and student verbalization among the categories of each dimension of

the category system has been presented in this section of the report,

a synopsis of the findings is presented forthwith in order to

summarize the quintessence of the observationally-derived results.

Although all L2 categorical classifications were found to

occur for at least some of the classes, a few categorizations

tended to be employed rather infrequently during the transpositional

phase of VIF instruction. In the CONTENT dimension, neither phonology

nor commentary was used to any marked degree either by the teachers

or the students. Although application and higher mental processes

classified according to the THOUGHT dimension tended to be utilized

minimally by the teachers, a parallel pattern was not found for the

students suggesting that teacher usage of these cognitive

categories may serve primarily as a catalyst for student cognitive

functioning at these levels. In the VERBAL FUNCTION dimension,

teacher behavior associated with feelings, divergent questions,

beliefs or opinions, and behavioral criticism occurred only rarely

relative to the other functions. Infrequent student behaviors of

student-to-student assistance and English comments were found. As

neither of these two student verbal functions is directly under the

control of the teacher, their occurrence appears to be restricted

to those students who tend to verbalize without the explicit

direction of the teacher.

The retention of all substantive, cognitive, and functional

categories in the L2 System appears warranted from the descriptive results. However, due to the limited incidence of certain categories during transposition, all observational variables of the present L2 System are not examined further in the present study.

Some systematic implementation patterns were found across teachers for the CONTENT dimension. Three teachers (exception, teacher A) were consistent between classes in their distribution of content categories during the Sketch and the Mechanism. All four teachers decreased their use of morphology and vocabulary and increased their use of syntax over time. Although teacher variation in distributions was found for all categories, the greatest discrepancy occurred in the use of vocabulary. Student substantive distributions tended to be uniform between classes for each teacher, with the exception of discussion for classes A1 and A2 during both the Sketch and the Mechanism, and classes C1 and C2 during the Sketch. The only consistent variation across all classes over time was found to be a decrease in morphology. Within-class content classification which approximated a normal distribution included only discussion for classes A1 and A2 and syntax for classes B1 and B2 during both the Sketch and the Mechanism, as well as morphology during the Sketch and syntax during the Mechanism for classes D1 and D2.

Indiscernible content and indiscernible thought in relation to the system categories tended to be almost identical for both teachers and students indicating that, since these two classifications tend to be associated with one another, some proportion of

classroom discourse is strictly functional in nature. Considerably more unspecified verbalization was found for the teachers than for the students suggesting that although teachers engage in equivocal functional expression, students tend to produce verbalization which manifests both content and thought properties. The most common examples of unspecified verbal functions for teachers include praise (002), verbal directions (006), and calling upon a student by name only (004 or 006), while the most common examples for students include agreement or disagreement with a teacher comment or query (008).

In the THOUGHT dimension, the majority of teacher verbalization was found to be either indiscernible or at the knowledge level. Generally, all teachers were consistent in their use of L2 categorizations of no discernible thought, knowledge, and comprehension over time. While the preponderance of student discourse was classified according to the knowledge level for all classes except A1 and A2 during the Mechanism, differences in cognitive distributions occurred between classes instructed by the same teacher. Only the students of teacher C exhibited consistent assignments over all thought categorizations between classes during the Sketch and the Mechanism. Classes instructed by teachers B and D also produced congruent distributions during the Mechanism. No consistent patterns across classes over time were found.

Generally, teacher behavior classified according to the VERBAL FUNCTION dimension was consistent between classes during

both observational units. Over time, an increase in the use of verbal directions was found for teachers B, C, and D with a concomitant decrease in the use of convergent questions for teachers C and D and the clarification and extension of student ideas for teacher B. A fairly narrow range in the utilization of both convergent and divergent response existed for all classes except A1 and A2 during both the Sketch and the Mechanism. The only consistent behavioral change for all classes was a decrease in convergent response over time.

The descriptive results of the study indicate that while teacher behavior classified according to the categories of the three dimensions of the L2 System tend to be consistent over class and time, the student categorizations do not exhibit an analogous pattern. This discrepancy appears to be a consequence of the differences in the student composition of the classes. Whether or not these results may also be attributable to teacher strategy is subsequently examined.

TEACHER INSTRUCTIONAL STRATEGIES

This section identifies and explores the solicitation and reinforcement strategies employed by the teachers and postulates the predominant teacher-student interactive patterns. Given the disparate nature of some of the categories in the three dimensions, the coalescence of certain categories has been undertaken in order to reduce the number of variables. Morphology and syntax have been combined under the rubric of structure since the material of the instructional unit appears to affect the proportion of the kind

of structure used. Knowledge and comprehension have been amalga-
mated into a single variable labelled Knowledge and Comprehension
as have application and higher mental processes referred to as
Application and H.M.P. owing to the relative rarity of the latter
two categories for the teachers plus the fact that their use tends
to be associated with the production of extended student verbal-
ization whereas the former two categories tend to be related
between teachers and students in a more direct manner. The seven-
teen teacher verbal functions have been collapsed into the
original seven enumerated by Flanders. Although the reduction
of the number of categorizations tends to diminish subtle distinc-
tions between classes, it serves to emphasize overt differences
which may exist in teacher strategy. The major solicitation and
reinforcement strategies for each dimension are identified by rank
ordering the per cent distributions of the above combined categories
for each class.

Solicitation

Question 5. What are the most frequent teacher solicitation
strategies for each dimension during the Sketch and the Mechanism?

Table 37 presents the per cent distribution of teacher con-
tent used as solicitors during the Sketch and the Mechanism. When
the distributions are ranked over all content categories for each
teacher, structure was found to be the fundamental solicitor for all
classes during the Sketch (37.0 to 54.2 per cent) and the Mechanism
(32.0 to 56.6 per cent) with the exception of classes A1 and A2

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Table 37

Per Cent Distribution of Teacher Content Used as Solicitors During the
Sketch and the Mechanism

Class	Sketch						Mechanism					
	*No C.	Phon.	Struct.	Vocab.	Disc.	Comm.	No C.	Phon.	Struct.	Vocab.	Disc.	Comm.
A1	14.6	1.5	34.8	41.1	6.1	1.8	19.7	2.0	34.4	24.4	18.6	.8
A2	7.6	1.4	39.9	43.7	5.4	2.1	13.5	1.3	32.0	26.9	24.7	1.7
B1	21.0	1.8	37.0	24.2	15.1	.9	25.0	2.0	49.6	16.0	6.7	.7
B2	21.8	1.6	34.7	26.7	14.5	.8	20.9	1.0	55.9	14.8	6.1	1.2
C1	27.3	1.7	43.3	14.5	10.2	3.0	37.4	.8	43.4	9.1	7.7	1.6
C2	31.4	1.1	39.3	15.1	10.9	2.2	37.2	1.2	40.2	9.9	9.2	2.4
D1	16.8	1.6	54.2	19.7	5.9	1.9	27.6	.9	52.2	9.9	8.3	1.1
D2	17.0	.8	52.4	21.7	6.9	1.2	18.8	.9	56.6	13.0	10.4	.3
Aggregate	20.8	1.4	42.0	24.2	9.8	1.8	26.4	1.2	46.6	14.2	10.2	1.3

*No C. = No discernible content, Phon. = Phonology, Struct. = Morphology and Syntax, Vocab. = Vocabulary,
Disc. = Discussion, Comm. = Commentary.

for which vocabulary was the primary solicitor during the Sketch.
Discussion ranked fourth for all classes during the Sketch (5.4 to
15.1 per cent) and the Mechanism (6.1 to 18.6 per cent). During
the Sketch, unspecified content ranked third for all classes ex-
cept C1 and C2 for which it ranked second. During the Mechanism,
unspecified content ranked second for all classes except A1 and A2
for which it ranked third. Vocabulary ranked second for teachers
B and D during the Sketch and third for teachers B, C, and D during
Mechanism. These results would tend to suggest that, although per-
centage differences occurred in the substantive distributions, a
consistent pattern over teachers emerged with respect to content
solicitation. Categories for which further analysis appears
warranted include indiscernible content, structure, vocabulary, and
discussion.

Table 38 presents the per cent distribution of teacher
thought used as solicitors during both units of instruction. Over
all classes, knowledge and comprehension ranked first during the
Sketch (66.2 to 91.9 per cent) and the Mechanism (62.0 to 85.4
per cent). Unspecified thought ranked second over all teachers
during the Sketch (7.6 to 31.4 per cent) and the Mechanism (13.5
to 37.4) while application and higher mental processes ranked third
during the Sketch (0.1 to 3.2 per cent) and the Mechanism (0.3 to
1.2 per cent). Indiscernible content and thought tended to occur
approximately to the same extent indicating that the two may be
associated together in conjunction with selected verbal functions
for solicitation, i.e., 004, 006.

Table 38

Per Cent Distribution of Teacher Thought Used as Solicitors
During the Sketch and the Mechanism

Class	*No T.	Sketch Know. & Comp.	App. & HMP	No T.	Mechanism Know. & Comp.	App. & HMP
A1	14.6	85.2	.1	19.7	79.8	.5
A2	7.6	91.9	.6	13.5	85.4	1.1
B1	20.6	76.3	3.2	25.0	74.0	1.1
B2	21.5	76.5	1.9	20.7	78.1	1.2
C1	27.3	69.5	3.2	37.3	62.3	.4
C2	31.4	66.2	2.4	37.0	62.0	1.1
D1	16.6	82.4	.9	27.3	71.9	.8
D2	17.0	82.1	.9	18.7	81.0	.3
Aggregate	20.7	77.5	1.8	26.3	72.9	.8

*No T. = No discernible thought, Know. & Comp. = Knowledge and
Comprehension, App. & HMP = Application and Higher Mental Processes.

Table 39 presents the per cent distribution of teacher verbal functions used for solicitation. The use of questions ranked as the primary solicitor for all classes during the Sketch (40.4 to 67.6 per cent) and the Mechanism (34.9 to 57.3 per cent). Use of ideas ranked fourth for all classes during the Sketch (4.3 to 14.7 per cent) and the Mechanism (4.5 to 9.2 per cent). Information and directions ranked second and third although their relative positions varied somewhat across classes over time.

The results of Tables 37 to 39 have indicated that the primary solicitors found in all eight classes tended to be structural and lexical knowledge and comprehension questions. The fairly extensive use of unspecified content and thought in conjunction with a verbal category indicated that teachers tended to call on students by name only (004 or 006) once a particular type of solicitation was established. This strategy has two major advantages: it saves time since the entire query or command need not be reiterated and it serves to maintain the attention of students to the verbal interaction. Since all students cannot continuously participate verbally, occasional withdrawal of substantive and cognitive clues from the students provides the teacher with some indication of whether or not the learners are engaged mentally in the instructional process. Teacher C, whose classes were the largest, tended to employ this technique somewhat more frequently than the other three teachers. The more numerous the students in a class, the more difficult it appears to be to include them equally in the verbal interaction. Any procedure which assists

Table 39

Per Cent Distribution of Teacher Verbal Functions Used as Solicitors During the
Sketch and the Mechanism

Class	Sketch							Mechanism						
	*1	2	3	4	5	6	7	1	2	3	4	5	6	7
A1	.0	2.0	8.2	49.2	25.3	14.6	.6	.0	2.0	8.2	44.1	27.6	17.2	.8
A2	.0	.7	7.0	51.3	31.4	9.4	.1	.0	1.1	8.4	47.1	30.3	12.7	.4
B1	.4	5.6	14.0	40.4	22.5	15.9	1.2	.1	6.2	9.2	36.4	20.1	26.7	1.3
B2	.8	5.2	14.7	44.1	18.9	15.5	.9	.1	6.0	8.2	38.9	19.5	25.8	1.4
C1	.0	2.0	4.3	67.6	13.0	12.6	.5	.1	3.1	4.5	57.3	12.2	21.9	.8
C2	.0	2.9	5.1	64.3	12.7	13.8	1.2	.1	3.1	6.1	55.5	13.8	20.1	1.3
D1	.1	3.9	5.6	49.4	24.9	15.4	.8	.0	7.0	7.6	34.9	29.3	20.0	1.2
D2	.1	5.1	5.6	51.6	26.8	9.9	1.0	.3	6.0	7.6	44.0	30.0	10.8	1.3
Aggregate	.2	3.5	8.0	53.0	21.0	13.5	.8	.1	4.6	7.3	45.1	21.7	20.1	1.1

*1. Feelings 2. Praise 3. Use of Ideas 4. Questions 5. Information 6. Directions 7. Criticism

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the teacher in sustaining the intellectual involvement of the students seems to be important pedagogically.

Reinforcement

Question 6. What are the most frequent teacher reinforcement strategies for each dimension during the Sketch and the Mechanism?

Table 40 presents the per cent distribution of teacher content used as reinforcers during the Sketch and the Mechanism. The primary kind of content reinforcement provided to the students in all classes with the exception of class A2 (for which it ranked third) was unspecified content during the Sketch (38.1 to 58.3 per cent) and the Mechanism (30.6 to 60.0 per cent). Discussion ranked fourth for all classes both during the Sketch (3.0 to 11.9 per cent) and the Mechanism (4.7 to 15.3 per cent). During the Mechanism, structure ranked second for all classes (26.4 to 38.3 per cent) while vocabulary ranked third (5.8 to 24.0 per cent). During the Sketch, structure ranked second for teachers C and D and class A1, first for class A2, and third for teacher B. Vocabulary ranked third for teachers C and D and class A1, and second for teacher B and class A2.

Table 41 presents the per cent distribution of teacher thought used as reinforcers during the Sketch and the Mechanism. Although the percentages of unspecified content and thought reinforcers are essentially identical, unspecified thought was not the fundamental kind of cognitive reinforcement received by all

Table 40

Per Cent Distribution of Teacher Content Used as Reinforcers During the
Sketch and the Mechanism

Class	Sketch						Mechanism					
	*No C.	Phon.	Struct.	Vocab.	Disc.	Comm.	No C.	Phon.	Struct.	Vocab.	Disc.	Comm.
A1	38.1	1.6	28.6	26.1	4.5	1.1	41.7	2.1	26.4	17.1	12.1	.6
A2	28.9	2.0	35.2	29.8	3.0	1.1	30.6	1.4	27.6	24.0	15.3	1.2
B1	46.7	2.0	18.7	21.3	11.2	.2	45.1	1.7	33.3	13.8	5.6	.5
B2	47.5	1.2	19.0	20.4	11.9	.0	46.7	.7	31.2	15.1	5.6	.7
C1	55.9	1.7	25.0	10.7	6.2	.5	60.0	.8	27.7	5.8	5.3	.4
C2	58.3	1.3	22.6	10.3	7.2	.3	54.1	1.2	29.2	7.7	7.1	.8
D1	51.0	1.3	31.4	11.5	4.0	.9	50.4	1.0	33.8	9.2	4.7	1.1
D2	48.4	.7	33.5	12.6	4.6	.2	44.2	.7	38.3	10.3	6.2	.2
Aggregate	48.1	1.5	26.2	17.0	6.8	.5	48.0	1.1	31.2	11.9	7.1	.7

*No C. = No discernible content, Phon. = Phonology, Struct. = Morphology and Syntax, Vocab. = Vocabulary,
Disc. = Discussion, Comm. = Commentary.

Table 41

Per Cent Distribution of Teacher Thought Used as Reinforcers During
the Sketch and the Mechanism

Class	*No T.	Sketch Know. & Comp.	App. & HMP	No T.	Mechanism Know. & Comp.	App. & HMP
A1	37.7	61.8	.6	41.7	57.3	1.0
A2	28.7	71.3	.0	30.6	68.1	1.4
B1	46.4	52.7	.9	45.0	53.5	1.4
B2	46.8	51.6	1.6	46.2	53.0	.8
C1	55.8	41.6	2.6	60.0	39.6	.5
C2	58.3	39.7	1.9	54.0	45.2	.8
D1	51.0	48.0	1.1	49.8	49.4	.7
D2	48.4	51.3	.3	44.2	55.1	.6
Aggregate	47.9	50.9	1.2	47.8	51.3	.9

*No T. = No discernible thought, Know. & Comp. = Knowledge and
Comprehension, App. & HMP = Application and Higher Mental Processes.

classes. The "no discernible thought" category ranked first only for teacher C during both the Sketch and the Mechanism. For teachers A and B, knowledge and comprehension ranked first during the Sketch (51.6 to 71.3 per cent) and the Mechanism (53.0 to 68.1 per cent). The percentages of indiscernible thought and knowledge and comprehension tended to be fairly similar for teacher D for both instructional units although during the Mechanism knowledge and comprehension predominated over no thought for class D2 (55.1 vs. 44.2 per cent). Application and higher mental process reinforcement ranked third over all classes during the Sketch (0.0 to 2.6 per cent) and the Mechanism (0.5 to 1.4 per cent).

Table 42 presents the per cent distribution of teacher verbal functions used as reinforcers during the Sketch and the Mechanism. Consistent over all classes, praise ranked as the most prevalent kind of reinforcement during the Sketch (36.4 to 62.3 per cent) and the Mechanism (30.9 to 62.6 per cent). Information ranked second for teachers A, B, and D during the Sketch (15.5 to 32.2 per cent) and the Mechanism (16.8 to 30.4 per cent). Teacher C consistently ranked questions ahead of information for both classes during the Sketch (31.8 vs. 17.5 per cent and 29.4 vs. 17.5 per cent) and the Mechanism (26.1 vs. 15.3 per cent and 29.4 vs. 18.1 per cent). Teachers A, B, and D ranked the use of students' ideas third during the Sketch (4.7 to 13.6 per cent). During the Mechanism, use of student ideas remained third in rank for teachers A and D although for class D2 questions shared the rank (4.9 vs. 4.7 per cent). Teacher B employed more directions

Table 42

Per Cent Distribution of Teacher Verbal Functions Used as Reinforcers During the
Sketch and the Mechanism

Class	Sketch							Mechanism						
	*1	2	3	4	5	6	7	1	2	3	4	5	6	7
A1	.0	53.5	10.2	3.1	28.0	3.3	1.8	.0	48.2	12.5	5.1	28.3	4.5	1.4
A2	.0	46.9	12.2	3.7	32.2	2.8	2.1	.2	46.2	13.9	5.2	30.4	2.3	1.9
B1	.1	56.5	13.6	4.0	19.5	5.1	1.2	.1	59.5	6.7	3.4	18.9	8.4	3.1
B2	.3	59.7	12.7	4.4	15.5	4.9	2.4	.2	62.6	5.5	4.5	16.8	8.1	2.4
C1	.0	36.4	4.3	31.8	17.5	7.8	2.2	.3	36.3	5.3	26.1	15.3	12.6	4.2
C2	.1	38.1	4.4	29.4	17.5	7.2	3.3	.1	30.9	5.2	29.4	18.1	12.5	3.8
D1	.1	62.3	6.2	3.7	22.8	3.2	1.7	.0	58.0	7.5	3.4	22.2	3.9	5.0
D2	.0	61.5	4.7	3.5	24.9	2.9	2.5	.1	57.1	4.9	4.7	28.7	1.9	2.6
Aggregate	.1	51.3	8.3	11.8	21.5	4.9	2.2	.1	49.8	7.1	11.2	21.4	7.3	3.2

*1. Feelings 2. Praise 3. Use of Ideas 4. Questions 5. Information 6. Directions 7. Criticism

than student ideas during the Mechanism for both classes B1 and B2
(18.9 vs. 6.7 per cent and 16.8 vs. 5.5 per cent).

Although the results are not as consistent over all teachers
as those reported for solicitation, the most common kinds of
reinforcement appear to be praise which was primarily unspecified
(002), followed by structural or lexical knowledge and comprehension
information. While feedback behaviors tended to be stable between
classes for each teacher, they did not necessarily persist over
time indicating that the instructional material may influence the
type of reinforcement strategy used.

Teacher-Student Interaction

While the preceding two subsections have identified the
solicitation and reinforcement strategies most commonly used by the
teachers, this subsection compares teacher strategy with student
participation. In this manner some indication of the interactive
processes in the classes becomes apparent. The means and standard
deviations of the frequencies of the variables are reported in
order to provide some indication of the within-class variation on
the variables as well as the relative influence of teacher strategy
on student verbal participation.

In order to further reduce the number of variables analyzed,
some grouping of student categories is reported. Convergent and
divergent verbalization is used rather than all six student
categories since this classification serves to identify that student
participation which is essentially controlled by the teachers
(convergent) and that which allows the student more freedom in

initiating and extending his participation (divergent). Further-

more, discussion of teacher strategy includes only indiscernible

thought as it is evidently similar to indiscernible content in

terms of the category system. Since the majority of directions

tended to be associated with student verbalization, verbal directions

alone are reported. Similarly, Flanders category 5 (information)

includes only L2 verbal functions 5 and 5c (information and

correction) as they appeared to be related most directly to student

verbalization. These adjustments are reported in all future sec-

tions of the report concerned with teacher strategy.

Question 7. What relationships exist between student

participation and teacher solicitation and reinforcement during the

Sketch and the Mechanism?

Table 43 presents the proportion of student verbalization

which was directly solicited and reinforced by the teacher for each

class during the Sketch and the Mechanism. Generally, teacher

solicitation, which was consistent between classes and over time,

tended to be fairly similar across teachers during the Sketch (0.57

to 0.77) and the Mechanism (0.44 to 0.72). The proportion of

student discourse which was directly reinforced also appeared to

be quite uniform across classes during the Sketch (0.59 to 0.82)

and the Mechanism (0.46 to 0.76). These findings indicate that

the prevailing interactive pattern between teachers and students

during transposition consisted of a teacher solicitation, followed

by student verbalization, followed by teacher reaction. Since

approximately sixty to seventy per cent of all student verbalization

Table 43

Proportion of Student Verbalization Which was Directly Solicited and
Reinforced for Each Class During the Sketch and the Mechanism

Class	Sketch		Mechanism	
	Solicited	Reinforced	Solicited	Reinforced
A1	.57	.59	.44	.46
A2	.67	.69	.52	.56
B1	.72	.75	.68	.70
B2	.65	.69	.63	.66
C1	.66	.66	.63	.65
C2	.61	.62	.59	.58
D1	.74	.81	.72	.76
D2	.77	.82	.69	.74
Aggregate	.67	.70	.61	.64

appeared to be directly under the control of the teacher, the role

of the teacher seemed to be the predominant determinant of the

kinds of participatory experiences which the students received.

The actual implementation of that role in substantive and cognitive

manifestations is subsequently examined.

Table 44 presents the proportion of selected content

variables of student verbalization which was directly solicited

and reinforced during both units of instruction. The use of

structure was found to be directly solicited most frequently by

all teachers during the Sketch (0.46 to 0.94) and the Mechanism

(0.42 to 0.93). The proportion of structural solicitation attributed

to teacher C tended to be somewhat lower than that of the others since

she was inclined to employ considerable unspecified solicitation in

her classes. The generally extremely high proportions for teachers A

and D indicated that when structure was manipulated in their classes,

students were provided with the substantive clues in most instances.

The fact that structural solicitation tended to be so highly

associated with student structural verbalization indicates that

generally the interaction was highly manipulative, i.e., question-

answer. The proportion of student structure which was reinforced

tended to be lower for all classes than was solicitation during

the Sketch (0.26 to 0.86) and the Mechanism (0.30 to 0.84). Since

indication of the specific content used is associated primarily with

reinforcement categories of repetitive praise (2r), information (5),

and correction (5c), the results suggest that teachers B and C

did not use these behaviors to the same extent as did teachers A

Table 44

Proportion of Selected Content Variables of Student Verbalization Which was Directly
Solicited and Reinforced for Each Class During the Sketch and the Mechanism

Class	Unit	Structure		Vocabulary		Discussion	
		Solicited	Reinforced	Solicited	Reinforced	Solicited	Reinforced
A1	S	.92	.78	.83	.54	.08	.06
	M	.93	.74	.80	.58	.13	.09
A2	S	.94	.86	.87	.61	.12	.07
	M	.90	.84	.77	.73	.23	.15
B1	S	.69	.36	.64	.59	.42	.33
	M	.60	.42	.73	.65	.20	.18
B2	S	.67	.38	.66	.53	.33	.28
	M	.62	.37	.65	.70	.18	.18
C1	S	.49	.28	.73	.54	.33	.20
	M	.46	.30	.57	.37	.21	.15
C2	S	.46	.26	.69	.47	.24	.16
	M	.42	.30	.58	.45	.24	.18
D1	S	.77	.49	.74	.47	.21	.15
	M	.67	.46	.62	.61	.27	.16
D2	S	.80	.54	.75	.46	.31	.22
	M	.72	.52	.77	.65	.32	.20
Aggregate	S	.65	.42	.74	.54	.25	.18
	M	.59	.41	.69	.60	.21	.15

and D. Teacher C in particular tended to employ proportionately more unspecified content reinforcement than did the other three teachers. Vocabulary tended to be solicited fairly consistently across teachers during the Sketch (0.64 to 0.83) and the Mechanism (0.57 to 0.80). When vocabulary was solicited teachers tended to provide the substantive clue in the query, i.e., Qu'est-ce que c'est? (414). Generally, vocabulary was employed less extensively than structure which tends to account somewhat for this finding. Another explanation for this result is that vocabulary does not lend itself as effectively to student-to-student verbal manipulation (8q-8) as does structure. The ranges of lexical reinforcement tended to be somewhat similar across classes during the Sketch (0.46 to 0.61) and the Mechanism (0.37 to 0.73). The proportions indicate which teachers used more repetitive praise, information, and correction.

The proportion of discussion which was solicited during the Sketch (0.08 to 0.42) and the Mechanism (0.13 to 0.32) indicates that the majority of this type of student content verbalization was extended in nature, i.e., students would continue speaking consider-ably beyond the three second coding interval. The predominant form of extended student verbalization was associated with the production of résumés (539) and descriptions (549) indicating that specific substantive, cognitive, and functional categories tend to occur together. The majority of structural and lexical verbalization was found to be associated with lower level (knowledge and comprehension) convergent verbalization since this type of content appeared to be highly congruent in terms of student participation and teacher

solicitation and reinforcement. The most prevalent content strategies for all teachers appeared to include structural and lexical manipulation and to a lesser extent, the elicitation of extended student verbalization.

Table 45 presents the proportion of selected thought variables of student verbalization which was directly solicited and reinforced for each class during the Sketch and the Mechanism. Unspecified thought has not been included in Table 45 since the proportion of teacher indiscernible thought was consistently higher than its student counterpart indicating that functional solicitation alone is a teacher strategy which does not result in unspecified substantive and cognitive student verbal functioning. As would be expected given the results of Table 44, the majority of student knowledge and comprehension verbalization was solicited during the Sketch (0.48 to 0.88) and the Mechanism (0.43 to 0.84). The lowest proportions were again found for teacher C who tended to employ more functional solicitation than the other three teachers. The solicitation of higher cognitive categories was found to be somewhat lower than for discussion during the Sketch (0.00 to 0.38) and the Mechanism (0.00 to 0.06) while similar results for reinforcement were found during the Sketch (0.01 to 0.38) and the Mechanism (0.01 to 0.06) indicating that some discussion occurs at the knowledge and comprehension levels of thought.

The results indicate that structure and vocabulary tended to be related to knowledge and comprehension. These substantive and cognitive classifications were found to be associated with convergent student verbalization since the student has little freedom in the choice of

Table 45

Proportion of Selected Thought Variables of Student
Verbalization Which was Directly Solicited and
Reinforced for Each Class During the Sketch
and the Mechanism

Class	Unit	Knowledge and Comprehension		Application and H.M.P.	
		Solicited	Reinforced	Solicited	Reinforced
A1	S	.83	.62	.00	.01
	M	.83	.62	.00	.01
A2	S	.88	.71	.01	.00
	M	.84	.72	.01	.02
B1	S	.61	.44	.38	.11
	M	.62	.46	.04	.06
B2	S	.65	.46	.08	.07
	M	.61	.44	.05	.04
C1	S	.55	.33	.15	.12
	M	.46	.30	.02	.03
C2	S	.48	.29	.11	.09
	M	.43	.31	.06	.05
D1	S	.73	.47	.05	.06
	M	.65	.47	.04	.04
D2	S	.73	.48	.09	.04
	M	.76	.55	.01	.03
Aggregate	S	.65	.44	.07	.05
	M	.60	.44	.02	.03

production. Teacher-student interactive patterns which were
concerned with such verbalization appeared to be highly manipu-
lative in nature. Higher level cognitive operations were found
to be associated with divergent student verbalization, usually in
conjunction with discussion. Since this type of behavior was not
solicited or reinforced to any extent, these categorizations
tend to be associated with the production of extended student
verbalization.

Table 46 presents the means and standard deviations of the
frequencies of selected teacher verbal functions used for both
solicitation and reinforcement for each class during the Sketch
and the Mechanism. Praise has not been included as it was ranked
as a reinforcer only by all teachers. Examination of the means of
the use of ideas (3 and 3c and 3x) for both solicitation and rein-
forcement indicates that since they were highly congruent, generally,
teachers use student ideas with the intent that the same student
or different students explore the idea further. Consequently, use
of verbal behaviors 3, 3c, and 3x serve a dual purpose, that of
solicitation and reinforcement. Questions (4 and 4d and 4p)
tended to be used primarily as solicitors by all teachers although
teacher C also used questions for reinforcement purposes indicating
that, rather than follow a student response with praise, she would
ask a further question. Information (5) and correction (5c)
tended to serve a twofold function as well for all teachers indicating
that teachers would inform students about the nature of their verbali-
zation with the explicit expectation that the student verbalize again

Table 46

Means and Standard Deviations of the Frequencies of Selected Teacher Verbal Functions Used for Both
Solicitation and Reinforcement for Each Class During the Sketch and the Mechanism

Class	Unit	Use of Ideas				Questions				Information and Correction				Verbal Directions			
		Solicitation		Reinforcement		Solicitation		Reinforcement		Solicitation		Reinforcement		Solicitation		Reinforcement	
		$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s	$\overline{X}$	s
A1	S	2.33	3.48	3.00	3.88	14.00	10.39	.92	1.61	7.20	9.22	8.13	8.92	4.08	2.22	.75	.97
	M	2.04	2.59	3.25	3.34	11.00	8.90	1.33	1.31	6.83	7.00	7.25	7.76	4.25	1.53	.96	.84
A2	S	2.83	2.99	5.11	4.75	20.67	14.18	1.56	1.54	12.61	9.28	13.28	9.44	3.78	2.32	.94	.91
	M	2.50	1.95	4.44	3.13	14.00	8.12	1.67	1.80	8.83	5.62	9.50	5.56	3.78	2.20	.50	.69
B1	S	7.14	5.57	7.29	4.28	20.67	8.42	2.14	2.08	11.24	6.49	10.10	6.06	8.14	3.71	2.57	2.34
	M	4.43	2.40	3.33	2.44	17.43	8.79	1.67	2.59	9.38	6.21	9.10	7.05	12.57	7.42	3.67	2.80
B2	S	5.95	5.49	5.41	5.22	17.86	7.49	1.86	2.07	7.59	4.84	6.40	3.93	6.27	3.09	2.00	1.65
	M	3.40	2.25	2.41	1.78	16.14	4.61	1.95	1.69	8.05	6.71	7.27	5.50	10.50	5.32	3.00	2.13
C1	S	1.73	2.63	1.73	1.98	27.27	24.11	12.83	11.15	5.17	4.75	7.03	5.47	5.10	6.26	3.10	3.62
	M	1.63	2.29	1.97	2.54	20.63	19.70	9.63	8.12	4.23	4.96	5.57	5.52	7.80	8.75	4.50	4.60
C2	S	2.04	2.01	1.78	2.39	25.85	17.50	11.89	8.76	5.04	4.74	7.00	5.61	5.56	4.44	2.85	2.29
	M	2.33	2.85	1.96	2.52	21.41	15.21	11.11	8.57	4.96	3.38	6.52	4.68	7.63	5.57	4.56	3.45
D1	S	2.00	1.94	2.42	2.16	17.54	5.81	1.46	1.08	8.79	4.91	8.75	4.96	5.46	3.45	1.21	1.19
	M	2.83	.54	2.96	2.98	13.08	4.91	1.33	1.82	10.71	6.46	8.46	5.05	7.46	3.30	1.54	1.83
D2	S	2.63	2.16	2.37	2.41	24.42	6.66	1.74	1.25	12.53	8.15	12.26	7.19	4.68	2.36	1.47	.94
	M	3.53	2.33	2.42	2.28	20.32	5.81	2.32	1.75	13.84	7.30	14.11	6.66	5.00	2.66	.89	.79
Aggregate	S	3.21	3.97	3.45	3.96	21.28	14.70	4.92	7.63	8.34	7.20	8.81	6.93	5.39	4.09	1.95	2.25
	M	2.75	2.58	2.76	2.77	16.94	12.04	4.35	6.32	7.99	6.65	8.16	6.46	7.45	6.07	2.63	3.12

subsequent to the information. Generally, verbal directions (6)
were used primarily for solicitation by all teachers.

These results indicate that three major interactive patterns
occurred. The primary pattern consisted of a teacher question
followed by convergent response followed by unspecified praise.
Queries tended to be classified as structural or lexical and re-
lated to knowledge and comprehension. To a lesser degree, except
for teacher C, some questions were functional only. Student con-
vergent verbalization produced the same substantive and cognitive
variations as did the teacher solicitation. A secondary pattern
included an intermediary step in which the student reply was re-
acted to by the teacher followed by a modified answer by the student.
This second student response would react to the substantive and
cognitive manifestation of the teacher's interjection. A third
pattern appeared to consist of a teacher direction followed by
divergent response which was extended in nature followed by some
form of reinforcement. These are only the three most prevalent
interactive patterns identified which appeared to exist between all
teachers and students. Variations on all of them occurred to
some extent by the teachers.

Synopsis

The major purposes of this section were to identify and
explore the instructional strategies employed by the teachers and
to postulate the predominant teacher-student interactive patterns.
Although considerable variation in the percentage distributions
of the categorizations of each dimension occurred, the teachers

tended to rank the variables in the same manner, suggesting per-
haps an inherent instructional order.

Structure was found to be the most prevalent form of content
solicitation, followed by vocabulary and indiscernible content,
which tended to reverse their ranks over time, followed by dis-
cuasion. All teachers ranked knowledge and comprehension as the
most common cognitive solicitation, followed by indiscernible
thought, and to a much lesser degree, application and higher mental
processes. Over time, questions were consistently ranked as the
principal form of solicitation. Use of ideas ranked fourth over
all teachers, while information and correction, and verbal directions
ranked second and third. These classifications indicate that the
primary solicitation strategy consisted of structural or lexical
knowledge questions.

For all teachers, content categorized as indiscernible in the
L2 System ranked as the fundamental kind of substantive reinforcement.
Structure, vocabulary, and discussion ranked next in the given order
respectively. While indiscernible content and thought distributions
tended to be equivalent, the prevalent type of cognitive reinforce-
ment provided to the students was knowledge and comprehension for
some classes, and unspecified thought for others. No consistent
pattern emerged with respect to all teachers, although they tended to
be consistent between classes and over time. Application and higher
mental processes ranked lowest for all teachers. Praise was found to
be the fundamental kind of reinforcement provided by all teachers
during the Sketch and the Mechanism. Information and correction,
questions, and use of ideas were also employed for reinforcement pur-

poses. The most common reinforcement received by all students appears to have been unspecified praise (002), followed by structural and lexical knowledge information and correction.

Examination of the proportion of student verbalization which was directly solicited and reinforced indicated that although variations occurred, certain pattern across classes emerged. Structural and lexical student verbalization tended to be solicited and reinforced fairly extensively by all teachers, although teacher C tended to use considerably more unqualified functional solicitation (004) than did the other three teachers. Knowledge and comprehension also tended to be employed fairly consistently between teachers and students, especially for solicitation, indicating that the majority of teacher-student verbal interaction tended to be associated with structural and lexical lower level cognitive manipulation in which the teachers asked questions which the students answered. The student response would be classified as convergent since little freedom of choice in verbalization is permitted in such solicitation. Neither discussion nor application and higher mental processes tended to be directly solicited or reinforced to any great extent. This finding indicates that these classifications tended to be associated with divergent response which was extended beyond the usual category and/or three second coding interval. Teacher solicitation appeared to serve only a catalytic function in the production of such divergent student verbalization.

The praise functions were found to be associated only with reinforcement, while questions and verbal directions were employed

primarily for solicitation. Use of ideas and information and correction tended to serve the dual purpose of solicitation and re-inforcement.

As a result of the interactive sequences found, and the distributions of the variables, the following three predominant teacher instructional strategies were postulated. The primary pattern consisted of a teacher question followed by student convergent verbalization, followed by unspecified praise. These questions tended to be structural or lexical knowledge items. Student convergent verbalization manifested the same substantive and cognitive properties as did the solicitation. A secondary pattern consisted of the same content, thought, and functional attributes with an intermediary teacher reaction to the student response which was subsequently modified by the student based on the teacher's interjection. A third pattern appeared to consist of teacher directions followed by discussion of primarily extended divergent student verbalization which tended to be associated with higher level cognitive functioning on the part of the student. Some form of teacher reaction occurred in response to the student discourse.

These results have indicated that teachers employ fairly characteristic patterns of solicitation and reinforcement. However, the variations which occurred in the verbal distributions of the variables, especially in terms of within-class variation, suggest that the patterns are employed globally, but not necessarily with respect to individual students. This finding is consistent with those reported in the earlier sections of this chapter. The student composition

of the class appears to affect the specific kinds of interactive
sequences associated with individual class members. Student
heterogeneity with respect to the criterion measures is examined
in the next section.

<div align="center">STUDENT CRITERION MEASURES</div>

While the preceding sections have explored the distributions
of teacher and student verbalization among the categories of each
dimension and selected variables of solicitation and reinforcement,
all derived observationally, this section examines the results by
class on each of the criterion measures tested: aptitude, attitude,
and achievement.

Question 8. What are the distributions by class of student
aptitude, attitude, and achievement criterion measures?

The means and standard deviations of the subtests for each of
the criterion tests are reported in turn.

Aptitude

Table 47 presents the means and standard deviations for the
subtest and total scores of the Modern Language Aptitude Test for
each class. The greatest variation among classes occurred for the
Spelling Clues subtest in terms of the means (10.89 to 18.78) and
the standard deviations (5.17 to 9.08). The classes tended to be
fairly similar both on the means and the standard deviations of the
other four subtests. Students found the Spelling Clues and Words in
Sentences subtests to be the most difficult. This is not surprising
since both are concerned primarily with orthographic skills which

Table 47

Means and Standard Deviations for the Modern Language Aptitude Test for Each Class

Class		N	Number Learning (43)*	Phonetic Script (30)*	Spelling Clues (50)*	Words in Sentences (45)*	Paired Associates (24)*	Total Test (192)*
A1	$\overline{X}$	24	33.00	25.46	17.58	15.83	17.21	109.08
	s		8.44	2.96	6.79	5.73	5.19	20.86
A2	$\overline{X}$	18	35.33	23.67	18.78	15.67	14.22	107.67
	s		6.67	2.92	9.08	3.93	6.91	19.53
B1	$\overline{X}$	21	35.52	25.00	15.19	16.00	13.76	105.48
	s		8.26	3.21	7.96	5.07	4.59	18.41
B2	$\overline{X}$	22	31.68	23.82	15.36	16.73	13.77	101.36
	s		6.80	3.51	5.97	4.58	4.74	11.34
C1	$\overline{X}$	30	36.20	24.10	16.77	19.30	18.17	114.53
	s		5.21	3.30	7.46	6.08	4.37	16.99
C2	$\overline{X}$	27	34.63	24.52	13.04	18.15	18.44	108.78
	s		6.89	3.36	6.52	6.49	5.76	21.26
D1	$\overline{X}$	24	32.92	23.29	13.38	14.42	16.21	100.21
	s		7.39	3.49	5.17	5.67	5.87	20.45
D2	$\overline{X}$	19	34.05	24.32	10.89	14.89	16.74	100.89
	s		6.08	2.34	7.37	6.09	4.97	19.74
Aggregate	$\overline{X}$	185	34.21	24.28	15.14	16.56	16.28	106.46
	s		7.15	3.26	7.43	5.83	5.60	19.45

*maximum score

receive minimal instructional emphasis in the early stages of VIF.
By French 11, the students have spent three years practicing oral
skills with only the most rudimentary introduction to reading and
writing. The finding that the students tended to do well on those
subtests associated with oral linguistic attributes suggests that
instruction in such skills can affect the apparent competence of
students and that aptitude may not be a characteristic which is
wholly independent of linguistic manipulation. The aggregate mean
for Spelling Clues and Words in Sentences represented approximately
30 and 37 per cent mastery, respectively, while approximately 68 per
cent attainment was reached for Paired Associates. Number Learning
and Phonetic Script aggregate mean scores indicated that approximately
80 per cent of the material was correctly identified by the students.

The average total scores ranged from a low of 100.21 for class
D1 to a high of 114.53 for class C1. With the exception of class B1
($\overline{X}$ = 101.36, s = 11.34), the standard deviations tended to be fairly
similar across classes (16.99 to 21.26). Consistent patterns between
classes for each teacher were evident. The classes of teachers A
and C scored above the aggregate mean while the classes of teachers B
and D scored below the mean. Generally, the overall mean aptitude
scores for both classes for each of the four teachers tended to be
similar.

Attitude

Table 48 presents the means and standard deviations of the
subtest and total scores of the selected scales of the National Test
Battery for each class. The ranges both in means and standard

Table 48

Means and Standard Deviations of Selected Scales of the National Test Battery for Each Class

Class	N		Integrative Orientation (20)*	Instrumental Orientation (20)*	Attitudes Toward Learning French (50)*	Desire to Learn French (32)*	Motivational Intensity (31)*	Total Scales (153)*
A1	24	$\bar{X}$	14.33	13.42	38.29	25.04	24.75	115.83
		s	1.93	2.14	6.52	3.59	3.18	13.33
A2	18	$\bar{X}$	14.39	13.00	31.72	22.72	21.78	103.61
		s	2.67	2.49	8.49	3.72	4.33	18.74
B1	21	$\bar{X}$	12.62	13.29	30.86	21.95	22.00	100.71
		s	3.40	1.48	7.39	2.98	3.09	14.33
B2	22	$\bar{X}$	13.50	13.59	32.55	21.45	22.64	103.73
		s	2.33	1.72	6.56	2.31	3.13	10.67
C1	29	$\bar{X}$	13.55	12.66	32.79	21.28	20.45	100.72
		s	2.92	2.44	7.60	3.92	4.01	17.66
C2	27	$\bar{X}$	15.30	14.07	38.07	24.07	23.70	115.22
		s	2.89	1.80	6.61	3.97	3.48	14.35
D1	24	$\bar{X}$	13.71	13.25	34.08	22.33	21.83	105.21
		s	2.56	1.71	6.10	3.46	3.13	13.33
D2	19	$\bar{X}$	13.79	13.95	34.16	22.16	21.58	105.63
		s	2.65	1.99	6.80	2.87	3.95	13.16
Aggregate	184	$\bar{X}$	13.92	13.39	34.24	22.65	22.35	106.55
		s	2.80	2.06	7.48	3.67	3.79	15.77

*maximum score

deviations for the subtests tended to be fairly uniform across classes indicating a generally consistent attitude pattern. The greatest variation occurred for the subtest Attitudes Toward Learning French in the means (30.86 to 38.29). Ranges on the total attitude scores were found to be fairly substantial both for the means (100.71 to 115.22) and the standard deviations (10.67 to 18.74). The aggregate means amounted to approximately 70 per cent of the possible scores for all subtest and total scores suggesting that students were generally favorably disposed toward learning French.

Whereas both classes scored consistently above or below the aggregate mean for all four teachers on total aptitude score, a similar pattern was not found for total attitude score. Both classes for teachers B and D scored below the mean on total attitude score as they had done on total aptitude score. However, classes A2 and C1 scored below the mean on attitude although they had scored above the mean on aptitude. Classes A1 and C2 continued to score above the mean on attitude. These results may explain some of the differences found in the verbal distributions between classes for teachers A and C.

Achievement

Table 49 presents the means and standard deviations of the subtest and total scores for each of the three Oral Production Tests. The number of students completing each test is also indicated since class completion rate varied over time. Fewer students submitted to the pre-test on the Sketch (N = 166) than either the post-test on the Sketch (N = 175) or the post-test on the Mechanism (N = 180). Students absent on the day the pre-test was administered were unable to take it

Table 49

Means and Standard Deviations for the Three Oral Production Tests for Each Class

| | | Sketch | | | | | | | | | | Mechanism | | |
| | | | Pre-Test | | | | Post-Test | | | | | Post-Test | | |
Class		N	Question-Answer (45)*	Description-Résumé (40)*	Total Test (85)*	N	Question-Answer (45)*	Description-Résumé (40)*	Total Test (85)*	N	Question-Answer (45)*	Description-Résumé (40)*	Total Test (85)*
A1	X̄	22	27.23	23.36	50.59	24	34.04	26.50	60.54	23	31.39	27.83	59.22
	s		7.82	7.32	14.35		6.63	4.34	9.87		7.12	4.89	9.78
A2	X̄	16	24.31	22.19	46.50	17	32.53	27.00	59.53	18	27.89	26.56	54.44
	s		10.07	4.48	13.72		5.39	3.09	7.61		7.80	3.62	10.01
B1	X̄	19	28.79	23.74	52.53	20	32.60	27.70	60.30	21	30.48	25.48	55.95
	s		7.13	4.02	10.18		4.09	4.01	6.68		7.87	4.14	10.12
B2	X̄	19	24.47	26.11	50.58	22	32.77	27.32	60.09	22	33.73	27.09	60.82
	s		7.83	3.52	10.00		5.49	3.38	7.42		5.67	4.04	8.48
C1	X̄	27	23.78	23.07	46.85	28	32.25	24.61	56.86	30	28.50	26.73	55.23
	s		8.27	5.59	12.73		6.56	4.02	9.96		6.62	4.45	10.31
C2	X̄	24	25.33	23.33	48.67	24	35.83	25.96	61.79	24	30.50	25.67	56.17
	s		7.70	4.46	11.03		3.86	4.04	7.03		7.13	4.58	10.64
D1	X̄	22	21.00	21.27	42.27	21	31.10	24.95	56.05	23	23.26	23.61	46.87
	s		7.32	4.58	9.55		7.64	5.37	11.61		5.86	5.73	10.58
D2	X̄	17	18.18	18.53	36.71	19	27.11	23.37	50.47	19	19.53	22.89	42.42
	s		8.02	4.26	10.63		8.61	4.61	12.21		7.98	4.94	10.77
Aggregate	X̄	166	24.22	22.78	47.01	175	32.42	25.89	58.31	180	28.33	25.81	54.13
	s		8.55	5.34	12.54		6.62	4.39	9.85		8.14	4.87	11.55

*maximum score

since the presentation of the Sketch of Lesson 17 followed immediately thereafter. Moreover, some audiotapes were lost for each test owing to faulty language laboratory recording.

The means of the Question-Answer section for the pre-test ranged from 18.18 to 28.79 with class A2 having a somewhat higher standard deviation (10.07) than the other seven classes (7.13 to 8.27). Scores on the Description-Résumé section ranged from 18.53 to 26.11 on the means and 3.52 to 7.32 on the standard deviations. Total mean scores ranged from a low of 36.71 for class D2 to a high of 52.53 for class B1. Total test standard deviations ranged from 9.55 to 14.35. The results of the pre-test indicate that considerable difference in the actual oral production ability of the classes as measured by the criterion test was evident. The pre-test achievement means for classes D1 and D2 were consistently below the mean, while classes A1 and C2 ranked above the aggregate total mean. These findings are in agreement with those found for total aptitude and attitude scores. However, classes B1 and B2, both of which ranked below the aggregate total mean scores on aptitude and attitude, were found to achieve above the mean indicating that aptitude and attitude may not be the only factors associated with success in second language learning. The findings for classes A2 and C1 were also found to be inconsistent across all three criteria.

Post-test mean scores on the Sketch indicated that all classes had gained in achievement after instruction of the Lesson (50.47 to 61.79). Student's t values on differences between means for those students of each class submitting to both the pre- and post-tests

for the Sketch are reported in Table 50. All mean increases were found

to be statistically significant beyond the 0.001 level of significance

testifying to the fact that, despite initial difference across classes

in oral production ability, classroom instruction promoted learning.

A general decrease in standard deviations occurred from the pre- to

the post-test of the Sketch in all classes except D1 and D2, suggesting

that instruction tended to reduce differences among students on achieve-

ment. Moreover, this finding implies that the effect of differences

among students with respect to aptitude and attitude and their influence

on achievement might be suppressed after instruction. The classes of

teachers B and D continued to rank above and below the aggregate mean,

respectively, as they had for the pre-test. The positions relative to

the aggregate mean for both the pre- and post-test also remained for

classes A1, C1, and C2. Class A2, which had scored below the aggregate

mean for the pre-test, shifted to a position above the mean for the

post-test.

Post-test scores for the Mechanism tended to decrease slightly

for all classes, except for class B2 which increased slightly. Total

test scores ranged from 42.42 to 60.82 for the means and 8.48 to

10.77 for the standard deviations. These findings suggest that some

gain in the post-test of the Sketch may be attributed to the pre-test

sensitization. However, differences between the post-test scores of the

Sketch and the Mechanism on the Question-Answer sections appear to be

the most predominant indicating that the material under instruction

probably affected the scores to a greater extent than did the effect

of the pre-test. While the Sketch was essentially a review of temporal

Table 50

Student's t Values for Differences Between Means on the Pre-
and Post-Test for the Sketch for Each Class

Class	N	$\overline{X}_{Pre}$	$\overline{X}_{Post}$	t*	df
A1	22	50.59	62.09	5.50	21
A2	16	46.50	60.25	6.43	15
B1	19	52.53	60.21	4.57	18
B2	19	50.58	59.90	6.25	18
C1	25	47.00	57.20	5.59	24
C2	21	49.67	61.76	5.74	20
D1	19	44.05	56.79	4.71	18
D2	17	36.71	51.77	7.30	16
Aggregate	158	47.44	58.85	15.70	157

*$p < .001$ for all t values.

relationships including tense manipulation, the Mechanism introduced the alternative forms of the negative. One might, therefore, anticipate a somewhat lower rate of achievement on the Mechanism. The reduction in mean achievement scores for classes D1 and D2 tended to be the greatest. Considering the relative rank below the aggregate mean on all student criteria for these two classes, this decrease is not unexpected. All other classes scored above the aggregate mean on the total post-test score for the Mechanism.

Over all achievement tests, classes A1, B1, B2 and C2 ranked above the aggregate mean while classes D1 and D2 ranked below it. Class A2 shifted to a position above the mean for the post-tests of the Sketch and the Mechanism, while class C1 placed above the mean only on the post-test of the Mechanism. Only classes A1 and C2 scored above the aggregate mean on all aptitude, attitude, and achievement total test scores. Classes D1 and D2 consistently scored below the aggregate mean on all criteria. Although classes B1 and B2 tended to rank below the aggregate mean on aptitude and attitude, they scored consistently above it on all three achievement tests. Classes A2 and C1 demonstrated no systematic tendencies in mean scores across all criteria with respect to the aggregate. The next chapter examines the relation-ship between student criteria and observationally-derived variables.

SUMMARY

Reported in this chapter are the descriptive results of the study. Due to the extensive nature of the data, only those variables

along each dimension of the observational system which appeared to occur with some regularity across classes and over time have been selected as ones appropriate for submission to correlational analysis. Total test scores on aptitude, attitude, and achievement scores were correlated with the selected observationally-derived variables. The individual student frequencies on each selected variable were submitted to the calculation of Pearson Product-Moment correlation coefficients. Such statistical analysis serves to identify the effect of student variation with respect to both observational and criterion variables.

Substantive categorizations chosen for further analysis include structure (a composite of morphology and syntax), vocabulary, and discussion. Each of these classifications was found to be associated with actual teacher and student verbalization as well as with teacher solicitation and reinforcement. Since unspecified content and thought tended to be highly congruent for both teachers and students, only the cognitive variant has been selected. Other cognitive groups include knowledge and comprehension, and application and higher mental processes. This arrangement has been promulgated on the basis of the functional differences between them with respect to teacher strategy and student verbalization. Use of ideas (3, 3c, and 3x), questions (4, 4d, and 4p), information and correction (5 and 5c), and verbal directions (6) represent the predominant teacher verbal functions employed for solicitation and reinforcement purposes. Praise (2 and 2r) was identified as a reinforcement function only. Student verbalization has been classified into two major divisions depending

on the influence of the teacher over the student: convergent (8 and

8q) which is essentially controlled by the teacher, and divergent

(9, 9q, 9c, and 9e) which may be determined by the student himself.

Each of the above substantive, cognitive, and functional variables

is related to student aptitude, attitude, and achievement criteria

in the next chapter.

CHAPTER VIII

CORRELATIONAL RESULTS

INTRODUCTION

This chapter presents the correlational results of the study.
It is divided into two major sections, the first of which presents the
intercorrelations among the criterion measures of aptitude, attitude,
and achievement. The second section reports the correlations between
the selected observational variables of the CONTENT, THOUGHT, and
VERBAL FUNCTIONS of the L2 System and the student criterion measures.
In order to provide some indication of the relationship between verbal
behavior identified by the observational instrument and student
characteristics, the frequency of the participation, solicitation,
and reinforcement of each observational categorization selected for
such analysis is correlated with student aptitude, attitude, and
achievement scores. A summary concludes the chapter.

All correlations are calculated on the basis of the individual
students' frequencies for any given observational classification. In
this manner, the aggregate consists of observational data derived
from 185 students, while teacher data depend on the number of students
in each class (18 to 30). The level of statistical significance
chosen to reject the null hypothesis that no relationship exists
between variables is 0.05. Since the aggregate consists of the data
from all eight classes combined, the size of the correlation coeffi-
cient required to reach statistical significance for it is considerably
lower than for any individual class. Therefore, more statistically

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significant correlations could be anticipated for the aggregate than for any given class.

Where missing data exist on the attitude and achievement measures for individual students, the correlations (and the probabilities that they are equal to zero) are based on the actual number of available scores for the given comparison. The reader is referred to the tables which provided the descriptive data for the student criterion measures (Tables 47 to 49) for the number of cases used in the calculation of the correlation coefficients and their associated probability levels.

In order to facilitate the discussion of the correlations associated with achievement, the pre- and post-tests of the Sketch will be referred to as such, while the post-test of the Mechanism will be referred to as the mechanism test. This procedure should prevent any possible confusion with respect to the identification of the latter two achievement tests.

INTERCORRELATIONS AMONG CRITERION MEASURES

While subsequent sections of this chapter examine the correlations between the observationally-derived variables and the criterion measures, this section explores the relationships among the criterion measures of aptitude, attitude, and achievement themselves. Such analysis determines whether or not aptitude and attitude do in fact relate to achievement in the present study as well as provide some indication of the nature of actual linguistic and cognitive performance of the sample as measured by the achievement tests.

Question 9. What relationships exist between aptitude, attitude, and achievement criterion measures for each class during the Sketch and the Mechanism?

Table 51 presents the correlations between the aptitude, attitude, and achievement tests for each class during the Sketch and the Mechanism. Aptitude and attitude were found to be positively correlated only for classes A2 (r = 0.48) and D2 (r = 0.53) beyond the 0.05 level of statistical significance while the aggregate (r = 0.23) was found to be significant beyond the 0.01 level of statistical significance. None of the other correlations between aptitude and attitude was significant. These results would appear to suggest that, generally, aptitude and attitude are independent, a finding which concurs with the results reported by Gardner and Lambert (1972) with respect to these two measures.

Aptitude was found to be a more effective predictor of second language success than was attitude. Positive correlations between aptitude and the pre-test of the Sketch were found for five classes (r = 0.47 to 0.63), while positive relationships were found for fully seven classes on the post-test (r = 0.42 to 0.73), on which only the correlation for class B2 did not reach statistical significance. The correlations between aptitude and the mechanism test were positive and significant for six classes (r = 0.44 to 0.70), the exceptions being classes A1 and A2. Aptitude-achievement correlations which were significant over all three achievement measures included classes C1, D1, and D2. All three achievement test scores were also significantly correlated with aptitude for the aggregate.

Table 51

Pearson Product-Moment Correlation Coefficients Between Aptitude
and Attitude and Achievement Scores for Each Class

Class	Aptitude and Attitude	Achievement and Aptitude		Mechanism Post
		Sketch		
		Pre	Post	
A1	.25	.47*	.57**	.33
A2	.48*	.63**	.60**	.44
B1	.29	.33	.46*	.44*
B2	-.06	.17	.34	.45*
C1	.25	.58**	.54**	.70**
C2	.07	.19	.42*	.59**
D1	.17	.48*	.48*	.66**
D2	.53*	.61**	.73**	.64**
Aggregate	.23**	.41**	.50**	.52**
		Achievement and Attitude		
A1		.19	.45*	.25
A2		.45	.29	.30
B1		-.19	.08	-.04
B2		.12	.28	.24
C1		.48**	.61**	.46**
C2		-.29	.38	.19
D1		.36	.01	.08
D2		.64**	.56**	.51*
Aggregate		.22**	.35**	.24*

*$p \leq .05$; ** $p \leq .01$.   Refer to Tables 47, 48 and 49 for the N's for
each criterion measure.

In the present study, attitude was found to be a less important factor than aptitude in the determination of second language success as measured by the achievement tests. Although all aggregate correlations between achievement and attitude were significant, their magnitude tended to be lower than those found between aptitude and achievement. On the pre-test of the Sketch only two classes were found to have significant correlations between attitude and achievement, classes C1 ($r = 0.48$) and D2 ($r = 0.64$). The correlations between attitude and both the post-test and the mechanism test were also found to be significant for these two classes. Only one other significant correlation was found for class A1 ($r = 0.45$) between the post-test of the Sketch and attitude. Although not statistically significant, negative correlations existed between attitude and the pre-test of the Sketch for classes B1 and C2, and between attitude and the mechanism test for class B1. The attitude measure in the present study did not appear to predict the success of second language learning as well as the aptitude test.

Classes C1 and D2 were found to have significant correlations between both aptitude and attitude and all three achievement tests. In addition, a significant correlation between aptitude and attitude was found for class D2. Since class D2 tended to rank below the others on all criterion measures, this finding appears somewhat anomalous, especially given the results for classes A1 and C2, both of which ranked above the others with respect to all measures. Although both classes A1 and C2 exhibited highly favorable attitudes toward learning a second language ($\overline{X}$'s = 115.83 and 115.22, respectively) only one

attitude-achievement correlation for class A1 reached statistical significance suggesting that positive attitudes are not necessarily associated with successful performance. Whether or not actual class-room behavior affects achievement is examined in subsequent sections of the chapter.

Table 52 presents the intercorrelations among the achievement tests themselves for each class. All correlations were positive and significant with the exception of the pre-post correlation for classes C2 and D1. Furthermore, the intra-achievement correlations tended to be higher for all classes than the correlations between achievement and both aptitude and attitude, indicating that actual performance is a better predictor of success than either aptitude or attitude. This finding is not surprising since all tests measured similar linguistic and cognitive skills. However, the affinity among tests represents only a partial explanation for the significant correlations. The actual language competence which underlies the ability to succeed on tests may be the principal reason for the highly significant corre-lations. Therefore, the score on one achievement test generally provides a good indication of a student's ability on subsequent tests.

Actual performance as measured by the achievement tests appeared to be the best predictor of success as twenty-two of the possible twenty-four intercorrelations were statistically significant. Aptitude also tended to be associated with success in that eighteen of the aptitude-attitude correlations reached statistical significance. Seven attitude-achievement correlations of which six were associated across all tests for two classes (C1 and D2) reached significance. The

Table 52

Pearson Product-Moment Correlation Coefficients Between
Achievement Scores for Each Class

Class	1* and 2*	1* and 3*	2* and 3*
A1	.77	.77	.60
A2	.87	.68	.72
B1	.71	.72	.82
B2	.78	.58	.78
C1	.73	.73	.83
C2	.41[+]	.60	.73
D1	.34[++]	.62	.72
D2	.75	.70	.66
Aggregate	.68	.71	.73

* 1 Sketch Pre-test, 2 Sketch Post-test, 3 Mechanism Post-test

[+]$p = .07$; [++]$p = .15$. All other correlations are significant ($p < .05$).
Refer to Table 49 for the N's for each achievement test.

results suggest that attitude did not appear to be closely related to achievement in six of the eight classes. Significant correlations between aptitude and attitude were also found for two classes (A2 and D2).

While this section has examined the interrelationships among the criterion measures, the following sections explore the relationship between the observationally-derived variables for each dimension and the criterion measures.

CRITERION—OBSERVATIONAL CORRELATIONS

The observational variables chosen for correlational analysis are those which occurred with some regularity across classes and over time. These include structure, vocabulary, and discussion in the CONTENT dimension, indiscernible thought, knowledge and comprehension, and application and higher mental processes in the THOUGHT dimension, and convergent, divergent, and total student talk, and teacher praise, use of ideas, questions, information and correction, and verbal directions in the VERBAL FUNCTION dimension. The frequencies of the participation, solicitation, and reinforcement of these CONTENT, THOUGHT, and VERBAL FUNCTION variables for individual students are correlated with their aptitude, attitude, and achievement scores to provide some indication of the relationship between verbal behavior as identified by the L2 System and inherent student characteristics. The sample size for each criterion-observational correlation depends on the number of students in each group for whom criterion scores are available. The correlations between all student criterion measures

and the observational variables are selected and examined in turn.

CONTENT

The results for structure, vocabulary, and discussion are presented in the order given. For each observational variable, the correlations between aptitude, attitude, and achievement are reported in separate tables. Participation, solicitation, and reinforcement have been grouped together in each of the three tables for each substantive variable in order to indicate their pedagogical relationship.

Question 10. What relationships exist between the participation, solicitation, and reinforcement of selected CONTENT variables and aptitude, attitude, and achievement for each class during the Sketch and the Mechanism?

Table 53 presents the correlations between aptitude and the participation, solicitation, and reinforcement of structure for each class during the Sketch and the Mechanism. Only the correlation between aptitude and participation during the Sketch for the aggregate (r=0.14) reached statistical significance. Although not statistically significant, the number of negative correlations over all classes increased from four during the Sketch to eleven during the Mechanism indicating a somewhat changed relationship between structure and aptitude over time. All aggregate correlations reversed direction over time.

Table 54 presents the correlations between attitude and the participation, solicitation, and reinforcement of structure for each

Table 53

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Structure for
Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.28	.06	-.05	.08	.13	.04
A2	.03	.07	.07	-.34	-.38	-.40
B1	.25	.13	.14	-.26	-.07	-.15
B2	.17	.00	.00	.02	.09	-.03
C1	.23	.21	.18	-.15	-.13	-.22
C2	.27	.29	.12	.08	.15	.07
D1	.07	.08	.28	.14	.01	.15
D2	-.39	-.41	-.30	.08	-.07	.04
Aggregate	.14*	.06	.03	-.05	-.10	-.12

*$p \leq .05$. Refer to Table 47 for the N's for the aptitude test.

Table 54

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Structure for
Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.38	.42*	.31	.35	.39	.22
A2	-.04	-.00	.04	-.14	-.19	-.31
B1	.28	.10	.17	.12	.21	.12
B2	-.21	-.21	-.41	-.36	-.34	-.34
C1	.53**	.51**	.49**	.49**	.51**	.41*
C2	.07	.11	.05	.29	.19	.24
D1	.20	.08	.26	.19	.15	.21
D2	-.17	-.17	-.24	.12	.03	.09
Aggregate	.15*	.10	.10	.11	.06	.04

*$p \leq .05$; **$p \leq .01$. Refer to Table 48 for the N's for the attitude test.

class during the Sketch and the Mechanism. All correlations for class C1 were found to be statistically significant both for the Sketch and the Mechanism. The close similarity among the correlation coefficients between attitude and the participation, solicitation, and reinforcement of structure for class C1 indicates that generally, teacher strategy tended to account for the correlations. The correlations between structural solicitation and attitude for class A1 ($r = 0.42$) during the Sketch was also significant. Only the correlation between participation and attitude during the Sketch for the aggregate ($r = 0.15$) reached statistical significance. It would appear that, with the exception of class C1, little relationship exists between aptitude and attitude and structure. Such a finding could be anticipated since structure played such a prominent role in all classes except A1 and A2. When approximately half of all student verbalization is categorized as structural, it suggests that structure is employed strategically by the teachers to a large extent and tends to be independent of student characteristics.

Table 55 presents the correlations between achievement and the participation, solicitation, and reinforcement of structure for each class during the Sketch and the Mechanism. Only the pre- and post-test correlations for class C1 reached statistical significance. Since all participation, solicitation, and reinforcement coefficients for this class tended to be almost identical for both tests, solicitation and reinforcement appear to be closely related. Both of these strategies also appear to have affected the amount of structural participation of the students, indicating that those students who

Table 55

Pearson Product-Moment Correlation Coefficients Between Achievement and the Participation,
Solicitation, and Reinforcement of Structure for Each Class During
the Sketch and the Mechanism

| | Sketch | | | | | | Mechanism | | |
| | Pre-test | | | Post-test | | | Post-test | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.28	.31	.15	.07	.09	-.06	.11	.12	.00
A2	.34	.37	.32	.04	.10	.05	.11	.11	.00
B1	-.37	-.21	-.31	-.00	.04	.14	.04	.06	-.02
B2	.06	.04	.06	.06	.03	-.03	-.36	-.01	-.27
C1	.50**	.50**	.51**	.43*	.42**	.45*	.23	.26	.11
C2	.21	.24	.20	.36	.37	.25	.28	.30	.29
D1	-.08	-.14	.05	.29	.21	.25	.05	-.12	.00
D2	-.33	-.31	-.26	-.31	-.23	-.25	.23	.12	.23
Aggregate	.13	.08	.04	.12	.05	.00	.06	-.00	-.07

*$p \leq .05$; **$p \leq .01$. Refer to Table 49 for the N's for each achievement test.

verbalized most in class Cl tended to be called upon to do so by the teacher. Why the relationship did not persist during the Mechanism is an interesting question.

In general, structure did not appear to be related to any criterion measure with the exception of selected instances for class Cl. The widespread usage of this type of content by the classes may be a reason for this finding.

Table 56 presents the correlations between aptitude and the participation, solicitation, and reinforcement of vocabulary for each class. No significant differences were found. The generally extremely low correlations on all variables suggest that aptitude is remotely associated with the use of vocabulary.

Table 57 presents the correlations between attitude and the participation, solicitation, and reinforcement of vocabulary for each class. Significant correlations were found across all three observational variables for both the Sketch and the Mechanism for class Cl. Although the correlations tended to be somewhat higher for the other classes than those between vocabulary and aptitude, none were statistically significant. The participation-attitude correlation for the aggregate ($r = 0.14$) almost reached significance ($p = 0.06$).

Table 58 presents the correlations between achievement and the participation, solicitation, and reinforcement of vocabulary for each class over all three tests. All nine aggregate correlations were found to be statistically significant indicating that when the students from the eight classes are combined, vocabulary appears to be positively associated with achievement. However, these general

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Table 56

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Vocabulary
for Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.15	.16	.09	.18	.24	.09
A2	.03	.02	.01	.13	.21	.09
B1	.17	.10	.06	.19	.11	.24
B2	.01	.08	-.12	-.07	-.27	-.10
C1	.12	.13	.29	.00	.11	.16
C2	.08	.06	.03	.16	.16	.08
D1	.05	.01	.03	-.01	.14	-.11
D2	.15	.10	-.10	-.08	-.16	-.18
Aggregate	.04	.05	.02	.06	.07	.00

Refer to Table 47 for the N's for the aptitude test.

Table 57

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Vocabulary
for Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.28	.22	.23	.24	.27	.20
A2	-.03	-.05	-.01	.11	.16	.00
B1	.27	.29	.41	.12	-.01	.12
B2	.10	-.03	.12	-.29	-.23	-.21
C1	.57**	.54**	.55**	.47**	.51**	.43*
C2	.13	.16	-.05	-.02	-.06	-.08
D1	.22	.33	.22	.12	.18	.23
D2	.31	.19	.06	-.19	-.34	-.18
Aggregate	.14	.13	.10	.10	.08	.04

*p ≤ .05; **p ≤ .01.   Refer to Table 48 for the N's for the attitude test.

Table 58

Pearson Product-Moment Correlation Coefficients Between Achievement and the Participation, Solicitation, and Reinforcement of Vocabulary for Each Class During the Sketch and the Mechanism

| Class | Sketch | | | | | | Mechanism | | |
| | Pre-test | | | Post-test | | | Post-test | | |
	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.47*	.42*	.36	.29	.30	.17	.28	.37	.20
A2	.28	.24	.16	.07	.03	-.03	.52*	.51*	.48*
B1	.16	.09	-.00	.26	.20	.10	.35	.45*	.40
B2	.23	.10	.14	.49*	.33	.31	.05	-.07	.05
C1	.45*	.46**	.52**	.28	.30	.38*	.27	.37*	.37*
C2	.30	.31	.44*	.24	.21	.15	.15	.10	.04
D1	.08	.21	.07	.38	.38	.36	.04	.06	-.01
D2	.02	.10	-.25	-.08	.07	-.08	.03	-.12	-.12
Aggregate	.31**	.28**	.27**	.23**	.19**	.17*	.23**	.24**	.20**

$*p \leqslant .05$; $**p \leqslant .01$. Refer to Table 49 for the N's for each achievement test.

results did not appear over all classes or achievement tests. The

correlations between achievement and the participation and solicitation

of vocabulary on the pre-test for Class A1 ($r_p = 0.47$, $r_s = 0.42$)*

reached statistical significance, as did all three variables on the

pre-test for class C1 ($r_p = 0.45$, $r_s = 0.46$, $r_r = 0.52$) and rein-

forcement on the pre-test for class C2 ($r = 0.44$). Correlations be-

tween vocabulary and the post-test which were significant included

only participation for class B2 ($r = 0.49$) and reinforcement for

class C1 ($r = 0.38$). Mechanism correlations which were significant

consisted of all three observational variables for class A2

($r_p = 0.52$, $r_s = 0.51$, $r_r = 0.48$), solicitation for class B1

($r = 0.45$), and solicitation and reinforcement for class C1 ($r_s = 0.37$,

$r_r = 0.37$). Although no consistent pattern over all classes emerged,

more significant correlations were found between vocabulary and

achievement than had been found for structure. This finding may be

due in part to the less frequent use made of this variable.

Table 59 presents the correlations between aptitude and the

participation, solicitation, and reinforcement of discussion for each

class during the Sketch and the Mechanism. Only the correlation be-

tween aptitude and the frequency of the participation of discussion

during the Sketch for the aggregate ($r = 0.21$) reached statistical

significance. In light of the earlier tables which presented the

correlations between aptitude and content variables, this finding

is not surprising. In general, aptitude does not appear to be re-

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*p = participation, s = solicitation, r = reinforcement.

Table 59

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Discussion
for Each Class During the Sketch and the Mechanism

Class	Sketch			Mechanism		
	Part	Sol	Reinf	Part	Sol	Reinf
A1	.24	-.03	.06	.25	.20	.21
A2	-.16	.06	.08	-.28	-.43	-.40
B1	.07	-.16	-.19	.04	.16	.17
B2	.25	-.09	.09	.21	-.11	.04
C1	.26	.28	.13	.09	.18	.14
C2	.27	.25	.18	-.06	.13	.05
D1	.33	.02	.14	-.19	-.27	-.26
D2	.27	.01	.20	.31	-.05	.01
Aggregate	.21**	.04	.03	.06	.01	.01

**p < .01. Refer to Table 47 for the N's for the aptitude test.

Table 60

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Discussion
for Each Class During the Sketch and the Mechanism

Class	Sketch			Mechanism		
	Part	Sol	Reinf	Part	Sol	Reinf
A1	.61**	.20	.15	.22	.28	.17
A2	-.22	.08	.08	-.22	-.27	.01
B1	.59**	.38	.31	.04	.27	.16
B2	.11	-.20	-.12	-.06	.09	.14
C1	.53**	.60**	.59**	.45**	.43*	.37*
C2	.16	-.13	-.23	.20	.35	.35
D1	.27	.40*	.36	-.03	-.19	.18
D2	.67**	.58**	.57*	.05	-.17	.00
Aggregate	.33**	.13	.08	.18**	.15*	.18**

*p ≤ .05; **p ≤ .01. Refer to Table 48 for the N's for the attitude test.

lated to content which is measured observationally.

Table 60 presents the correlations between attitude and the participation, solicitation, and reinforcement of discussion for each class during the Sketch and the Mechanism. While only the correlation between attitude and participation for the aggregate ($r = 0.33$) reached statistical significance during the Sketch, all three variables of discussion were significantly correlated with attitude for the aggregate ($r_p = 0.18$, $r_s = 0.15$, $r_r = 0.18$) during the Mechanism. During the Sketch, correlations between attitude and participation for classes A1 ($r = 0.61$), B1 ($r = 0.59$), C1 ($r = 0.53$), and D2 ($r = 0.67$) were all significant beyond the 0.01 level of statistical significance. This finding suggests that students with positive attitudes tended to verbalize at the discussion level. Both solicitation and reinforcement for classes C1 ($r_s = 0.60$, $r_r = 0.59$) and D2 ($r_s = 0.67$, $r_r = 0.58$) were also significantly correlated with attitude during the Sketch indicating that in these two classes the teachers called upon students with positive attitudes and provided feedback of the same content as well. This same pattern was also found for class C1 ($r_s = 0.43$, $r_r = 0.37$) during the Mechanism. Although the correlation between solicitation and attitude for class D1 ($r = 0.40$) also reached significance during the Sketch, class participation did not, suggesting that teacher strategy did not affect the students in the same manner as in class D2. Of the four teachers, this example of strategy effect on students is the only one discovered so far. This appears to indicate that teacher strategy, although consistent across classes in a global

manner, does not necessarily affect different groups of students in the same way.

Table 61 presents the correlations between achievement and the participation, solicitation, and reinforcement of discussion for each class during the Sketch and the Mechanism. All aggregate correlations, with the exception of solicitation for the Mechanism were statistically significant indicating that when the data for all students are combined, discussion appears to be another content variable associated with achievement. Class C1 produced its now familiar pattern of consistently significant correlations across all variables, the only one not significant being the correlation between frequency of discussion reinforcement and achievement for the post-test. Furthermore, participation and achievement were significantly correlated for class B2 ($r_{S1} = 0.60$, $r_{S2} = 0.56$, $r_M = 0.51$)* over all three tests with solicitation and reinforcement also reaching statistical significance with achievement for this class on the Mechanism test. Class C2 exhibited a significant relationship between participation and achievement on the pre-test only ($r = 0.45$). All observational variables were significantly correlated with achievement on the post-test for class D1 ($r_p = 0.46$, $r_s = 0.44$, $r_r = 0.44$). Solicitation and achievement on the mechanism test were also significantly correlated for class D1 ($r = -0.54$) although in a negative direction suggesting that during the Mechanism, teacher D called upon students who did

*S1 = Sketch - pre-test, S2 = Sketch - post-test, M = Mechanism - post-test.

Table 61

Pearson Product-Moment Correlation Coefficients Between Achievement and the
Participation, Solicitation, and Reinforcement of Discussion for
Each Class During the Sketch and the Mechanism

| | Sketch | | | | | | Mechanism | | |
| | Pre-test | | | Post-test | | | Post-test | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.09	.43*	.32	.36	.25	.14	.25	.27	.15
A2	.12	.11	.07	.19	.32	.22	.19	.05	-.02
B1	.12	.03	-.10	.33	.22	.18	.11	.28	.17
B2	.60**	.40	.42	.56**	.31	.33	.51**	.46*	.44*
C1	.58**	.60**	.56**	.48**	.46**	.31	.39*	.35*	.43*
C2	.45*	.28	.21	.14	.11	.02	.09	.31	.23
D1	.38	.17	.03	.46*	.44*	.44*	-.30	-.54**	-.15
D2	.46	.34	.49*	.48*	.34	.42	.49*	-.02	.17
Aggregate	.42**	.32**	.27**	.44**	.27**	.24**	.25**	.11	.18*

*p ⩽ .05; **p ⩽ .01. Refer to Table 49 for the N's for each achievement test.

not achieve well to produce discussion verbalization. It is not unexpected, therefore, that a negative correlation between participation and achievement should also result even though it was not statistically significant. Class D2, however, exhibited positive correlations between participation and achievement on all tests (r_{S1} = 0.46, r_{S2} = 0.48, r_M = 0.49) with the pre-test correlation almost reaching significance (p = 0.06) as did the post- and mechanism tests. A positive significant correlation was also found between discussion reinforcement and pre-test achievement for class D2 (r = 0.49).

In summary, seven significant correlations were found between observational variables and both pre- and post-test achievement, while eight were found for the mechanism test for individual classes. Of these correlations, frequency of participation was significantly correlated with all three achievement tests for classes B2 and C1. Solicitation and achievement were also consistently correlated for class C1. No other persistent patterns over all three achievement tests were evident.

Class C1 appeared to be the only one of the eight classes for which a consistent pattern of positive and significant correlations with respect to content occurred. Attitude was significantly correlated with the participation, solicitation, and reinforcement of structure, vocabulary, and discussion both during the Sketch and the Mechanism. Furthermore, the correlations between attitude and each of the observational variables—participation, solicitation, and reinforcement—for each content classification tended to be similar indicating that teacher strategy was closely associated with

student participation. These results appear to suggest that students with favorable attitudes were consistently chosen to participate by the teacher. Significant correlations between achievement and observational variables also occurred but the pattern was not as uniform as for attitude. Of the total number of achievement – observational correlations possible, 75 per cent were significant. Only the correlations between the participation and solicitation of discussion attained significance over all three achievement tests. No correlations between aptitude and any observational variables were significant. Fully 38 of the total 63 correlations possible for the content dimension were significant: none of the 18 for aptitude, all 18 attitude, and 20 of the 27 achievement relationships.

For the aggregate, fewer significant correlations were found than for class C1 although all were also positive. The 24 significant correlations were distributed among the criteria as follows: 2 for aptitude, 5 for attitude, and 17 for achievement. Over all classes, observational variables appeared to be most closely related to achievement, especially content classifications of vocabulary and discussion which together garnered all significant correlations. Structure was not significantly correlated with any achievement test scores.

Only 29 significant correlations were found for the remaining seven classes (excluding class C1), only one of which was negative. Seven of these correlations involved attitude while 22 involved achievement. The distribution per class follows:

| A1 | 5 | B1 | 2 | C1 | (38) | D1 | 5 |
| A2 | 3 | B2 | 6 | C2 | 2 | D2 | 6 |

The only consistent pattern for any given class was found between participation and achievement for all three tests for class B2. These results indicate that the observationally-derived content variables in this study were not significantly correlated with any criteria in a consistent manner for individual classes with the exception of class C1.

THOUGHT

Cognitive classifications of indiscernible thought, knowledge and comprehension, and application and higher mental processes were correlated with the student criteria. The reader is reminded that participation for which the cognitive qualification is indiscernible is different from either solicitation or reinforcement. Since indiscernible thought and content were so closely associated, this cognitive classification should be considered with reference to its substantive counterpart as well. The same order of presentation is reported as in the preceding subsection.

Question 11. What relationships exist between the participation, solicitation, and reinforcement of selected THOUGHT variables and aptitude, attitude, and achievement for each class during the Sketch and the Mechanism?

Table 62 presents the correlations between aptitude and the participation, solicitation, and reinforcement of indiscernible thought for each class during the Sketch and the Mechanism. Three correlations between aptitude and the frequency of unqualified participation reached statistical significance: class C1 ($r = 0.46$) and D1

Table 62

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Indiscernible
Thought for Each Class During the Sketch and the Mechanism

	Sketch			Mechanism		
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.11	.09	.27	.05	.12	.29
A2	-.15	-.08	.03	-.58**	-.21	-.06
B1	-.31	-.08	.01	.38	-.08	-.23
B2	-.04	.26	.13	-.28	-.08	-.18
C1	.46**	.16	.15	.16	-.08	-.02
C2	.03	.27	.33	-.16	.03	.13
D1	-.45*	.18	.05	-.08	.10	-.14
D2	.04	.21	.03	-.23	.55**	.08
Aggregate	-.10	.15*	.12	-.16*	.04	.00

*$p \leqslant .05$; **$p \leqslant .01$. Refer to Table 47 for the N's for the aptitude test.

Table 63

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Indiscernible
Thought for Each Class During the Sketch and the Mechanism

	Sketch			Mechanism		
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.22	.25	.44*	.28	.32	.43*
A2	.08	-.14	-.11	-.02	.01	.06
B1	.08	.18	.22	.15	.11	.05
B2	-.25	-.07	-.13	-.36	-.19	-.50*
C1	.17	.51**	.54**	.14	.48**	.51**
C2	-.06	.02	.13	.10	.26	.25
D1	-.11	.32	.15	.22	.24	-.00
D2	.23	.38	.35	-.34	.16	.09
Aggregate	-.04	.18*	.19**	.02	.20**	.16*

*$p \leqslant .05$; **$p \leqslant .01$. Refer to Table 48 for the N's for the attitude test.

(r =−0.45) during the Sketch, and class A2 (r =−0.58) during the

Mechanism. The positive correlation for class C1 may be attributable

in part to the generally high aptitude scores for this class

($\overline{X}$ = 114.53). Another possible explanation may be that students in

this class tended to participate at all cognitive levels. The

negative correlations for classes A2 and D1 indicate that low apti-

tude students tended to be called upon usually either to affirm or

deny a teacher statement or query. This strategy can be employed

in order to involve more students, especially those who have diffi-

culty producing an actual answer. A significant correlation for the

aggregate (r =−0.16) indicated a slight tendency toward implemen-

tation of this strategy over all teachers during the Mechanism. The

positive significant correlations between aptitude and unspecified

solicitation found for class D2 (r = 0.55) during the Mechanism and

the aggregate (r = 0.15) during the Sketch indicate that another

possible teacher strategy consists of withdrawing substantive and

cognitive clues from the solicitation for students perceived as high

ability learners. This interpretation of differential teacher

strategy with respect to the ability level of the students appears

plausible given the absence of significant correlations between

aptitude and the selected content categories for any class. Unquali-

fied reinforcement did not appear to be related to student aptitude.

Table 63 presents the correlations between attitude and the

participation, solicitation, and reinforcement of unspecified

thought for each class during the Sketch and the Mechanism. Un-

specified reinforcement and attitude were found to be significantly

correlated over time for classes A1 (r_S = 0.44, r_M = 0.43)*. C1
(r_S = 0.54, r_M = 0.51), and the aggregate (r_S = 0.19, r_M = 0.16).
Since reinforcement lacking qualification tended to be associated
with praise (002), one can assume that students who appeared to
enjoy their language experience tended to be provided with positive
albeit cryptic feedback. A negative correlation which was statis-
tically significant was found for class B2 (r = -0.50) during the
Mechanism indicating an inverse relationship. Persistent positive
correlations between indiscernible thought and solicitation which
reached significance included class C1 (r_S = 0.51, r_M = 0.48)
and the aggregate (r_S = 0.18, r_M = 0.20) suggesting that students
displaying favorable attitudes tended to be called upon to partici-
pate verbally. The equivalent significant correlations were not
found for indiscernible participation since the majority of student
verbalization tended to exhibit explicit cognitive and substantive
properties.

Table 64 presents the correlations between achievement and
the participation, solicitation, and reinforcement of unspecified
thought for each class during the Sketch and the Mechanism. The
only significant correlations which existed over all three achieve-
ment tests included reinforcement for class A1 (r_{S1} = 0.58, r_{S2} = 0.48,
r_M = 0.44) and solicitation for the aggregate (r_{S1} = 0.26, r_{S2} = 0.25,
r_M = 0.16). While significant correlations were found between

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*S = Sketch, M = Mechanism

Table 64

Pearson Product-Moment Correlation Coefficients Between Achievement and the Participation,
Solicitation, and Reinforcement of Indiscernible Thought for Each Class
During the Sketch and the Mechanism

| Class | Sketch | | | | | | Mechanism | | |
| | Pre-test | | | Post-test | | | Post-test | | |
	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.12	.30	.58**	.03	.06	.48*	-.13	.32	.44*
A2	-.13	.02	.37	-.11	-.03	.29	-.24	.10	.40
B1	-.01	-.19	-.11	-.13	.01	.12	.01	.27	.07
B2	.16	.60**	.34	.13	.54**	.37	.03	.14	-.16
C1	.49**	.46**	.49**	.17	.40*	.38*	.26	.25	.30
C2	.20	.38	.31	-.02	.35	.38	-.13	.24	.29
D1	-.34	.10	.04	.29	.46*	.49*	-.51**	-.03	-.22
D2	-.06	.32	.19	.21	.37	.31	-.13	.71**	.21
Aggregate	.05	.26**	.24**	.03	.25**	.24**	-.24**	.16*	.11

*$p \leq .05$; **$p \leq .01$. Refer to Table 49 for the N's for each achievement test.

equivocal solicitation and achievement for both the pre- and post-tests of the Sketch for classes B2 ($r_{S1} = 0.60$, $r_{S2} = 0.54$) and C1 ($r_{S1} = 0.46$, $r_{S2} = 0.40$) and reinforcement for class C1 ($r_{S1} = 0.49$, $r_{S2} = 0.38$), the positive relationships did not extend to the mechanism test. Negative correlations reaching statistical signi-ficance were found between unqualified participation and the mechanism test for class D1 ($r = -0.51$) and the aggregate ($r = -0.24$) suggesting that students who produced this type of verbalization tended to do poorly on the test. This finding for the aggregate is consistent with the negative relationship found between unspecified participation and aptitude. A highly significant correlation be-tween achievement and solicitation lacking cognitive and substan-tial qualification on the mechanism test was found for class D2 ($r = 0.71$). This supports the previous finding that during the Mechanism teacher D called upon class D2 students of high ability who apparently also achieved well to verbalize when the exact sub-stantive and cognitive clues were not provided in the solicitation.

The preceding three tables concerned with unspecified thought and student criterion measures have identified some tentative instructional strategies. Although the results are inconclusive given the disparate patterns among the classes of the teachers, a possible link may exist between the perceived aptitude and attitude of the students and the amount of solicitation and reinforcement re-ceived. Furthermore, the relationship between solicitation and achievement appears to be positive. Examination of the teacher ver-bal functions used for solicitation will indicate the nature and

extent of the association.

Table 65 presents the correlations between aptitude and the participation, solicitation, and reinforcement of knowledge and comprehension for each class during the Sketch and the Mechanism. No significant correlations were found. Since the lower level cognitive processes were used so extensively, they represent the majority of teacher-student verbal interaction. Aptitude did not appear to affect the utilization of knowledge and comprehension for any given observational variable.

Table 66 presents the correlations between attitude and the participation, solicitation, and reinforcement of knowledge and comprehension for each class during the Sketch and the Mechanism. Significant correlations ($p \leq 0.01$) were found for all observational variables over time for class C1. This finding is consistent with previous results concerned with attitude and content found for class C1. Apparently an association between attitude and observationally-derived data existed for this class. Participation and attitude were also significantly correlated for class B1 ($r = 0.44$) during the Sketch. Aggregate correlations between participation and achievement persisted over time ($r_S = 0.20$, $r_M = 0.16$) while the correlation between solicitation and attitude reached significance only during the Sketch ($r = 0.15$). The generally non-significant results could be anticipated given the essentially manipulative nature of transposition. Since knowledge and comprehension represent the predominant form of the cognitive manipulations associated with transpositional activities, the utilization of these thought classifications would

Table 65

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Knowledge
and Comprehension for Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.07	.11	.01	.15	.17	.09
A2	.04	.05	.05	-.26	-.19	-.26
B1	.19	.04	.00	-.13	-.01	-.02
B2	.11	-.03	-.03	-.04	-.06	-.05
C1	.13	.16	.19	-.10	-.03	-.09
C2	.21	.25	.17	.06	.16	.06
D1	-.01	.00	.14	.06	-.03	.02
D2	-.14	-.23	-.17	.12	-.13	-.02
Aggregate	.10	.05	.02	-.02	-.05	-.08

Refer to Table 47 for the N's for the aptitude test.

Table 66

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Knowledge
and Comprehension for Each Class During the Sketch and the Mechanism

| | Sketch | | | Mechanism | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.34	.32	.28	.32	.37	.25
A2	-.03	-.02	.02	-.05	-.08	-.10
B1	.44*	.29	.38	.13	.21	.15
B2	-.06	-.20	-.17	-.31	-.30	-.26
C1	.53**	.54**	.55**	.49**	.53**	.47**
C2	.14	.15	.02	.26	.22	.25
D1	.24	.21	.30	.16	.11	.26
D2	.23	.10	.06	.08	-.16	.00
Aggregate	.20**	.15*	.12	.16*	.12	.10

*p ≤ .05; **p ≤ .01. Refer to Table 48 for the N's for the attitude test.

tend to be unrelated to either aptitude or attitude. This finding was substantiated by the equally non-significant correlations found between structure and vocabulary, which represent the most common content manipulations, and the independent student criteria.

Table 67 presents the correlations between achievement and the participation, solicitation, and reinforcement of knowledge and comprehension for each class during the Sketch and the Mechanism. The correlations for all observational variables and pre- and post-test achievement for the Sketch reached statistical significance for class Cl. Significant correlations between both participation and solicitation and pre- and post-test achievement also persisted for the aggregate. The correlation between reinforcement and achievement for the aggregate was found to be significant only for the pre-test ($r = 0.19$). Participation and achievement on the mechanism test ($r = 0.14$) almost reached the accepted level of statistical significance ($p = 0.06$). Despite the apparent existence of a global tendency toward a positive relationship between participation and achievement, the results suggest that lower level cognitive verbalization does not appear to be associated with success in individual classes.

Table 68 presents the correlations between aptitude and the participation, solicitation, and reinforcement of application and higher mental processes for each class during the Sketch and the Mechanism. While all observational variables were significantly correlated with aptitude for class Cl during the Sketch, a similar pattern was not found for the Mechanism. A positive relationship

Table 67

Pearson Product-Moment Correlation Coefficients Between Achievement and the Participation, Solicitation, and Reinforcement of Knowledge and Comprehension for Each Class During the Sketch and the Mechanism

Class	Sketch						Mechanism		
	Pre-test			Post-test			Post-test		
	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.37	.41	.27	.18	.22	.05	.23	.25	.11
A2	.30	.28	.23	.08	.09	.04	.23	.32	.26
B1	-.12	-.10	-.25	.20	.16	.13	.16	.22	.15
B2	.29	.21	.22	.37	.25	.22	-.17	.05	-.09
C1	.49**	.52**	.54**	.41*	.41*	.43*	.23	.30	.23
C2	.27	.28	.31	.37	.34	.26	.26	.29	.25
D1	-.03	-.03	.03	.39	.34	.39	-.03	-.20	-.05
D2	-.04	-.12	-.11	-.02	-.04	-.06	.30	.02	.17
Aggregate	.24**	.22**	.19*	.22**	.17*	.13	.14	.09	.06

*$p \leq .05$; **$p \leq .01$. Refer to Table 49 for the N's for each achievement test.

Table 68

Pearson Product-Moment Correlation Coefficients Between Aptitude and
the Participation, Solicitation, and Reinforcement of Application
and Higher Mental Processes for Each Class During the
Sketch and the Mechanism

	Sketch			Mechanism		
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.32	.04	.40*	.20	-.12	-.04
A2	-.16	.07	.00	-.14	-.46	-.22
B1	.08	-.23	-.15	.08	.27	.47
	.30	.10	.35	.26	-.13	-.04
C1	.40*	.39*	.40*	.09	-.17	-.01
C2	.36	-.11	-.29	-.08	-.04	-.21
D1	.35	.17	.14	-.16	.08	.20
D2	.36	.31	.27	.18	.04	-.23
Aggregate	.27**	.11	.13	.05	-.04	.01

*p < .05; **p < .01.   Refer to Table 47 for the N's for the aptitude test.

Table 69

Pearson Product-Moment Correlation Coefficients Between Attitude and
the Participation, Solicitation, and Reinforcement of Application
and Higher Mental Processes for Each Class During the
Sketch and the Mechanism

	Sketch			Mechanism		
Class	Part	Sol	Reinf	Part	Sol	Reinf
A1	.58**	.25	-.18	.14	-.28	-.40*
A2	-.25	-.25	.00	-.20	-.17	-.22
B1	.55**	.34	.09	-.04	.24	.51*
B2	.23	-.04	.04	-.09	-.01	-.10
C1	.53**	.54**	.53**	.45**	.06	.00
C2	-.36	-.15	-.24	-.02	.09	-.12
D1	.23	.03	.17	-.01	.02	-.02
D2	.60**	.78**	.55*	-.10	.12	.20
Aggregate	.29**	.14	.09	.11	.02	.00

*P < .05; **p < .01. Refer to Table 48 for the N's for the attitude test.

between reinforcement and aptitude was found for class A1 (r = 0.40) during the Sketch. Only higher cognitive level participation and aptitude during the Sketch attained statistical significance for the aggregate (r = 0.27). Disregarding class C1, it would appear that aptitude and overt application and higher mental process cognitive functioning are not related.

Table 69 presents the correlations between attitude and the participation, solicitation, and reinforcement of application and higher mental processes for each class over time. During the Sketch, participation was significantly correlated beyond the 0.01 level of statistical significance for the aggregate (r = 0.29) and for four individual classes: A1 (r = 0.58), B1 (r = 0.55), C1 (r = 0.53) and D2 (r = 0.60). The relationship persisted over time for class C1 (r = 0.45). These results for the Sketch are identical in scope and direction as well as general magnitude to those found for these four classes and the aggregate with respect to discussion and attitude, indicating that the predominant form of discussion is associated with higher level cognitive functioning. The categorical classification of such verbalization is usually 539 or 549. This same pattern of significant correlations will be presented for divergent verbalization and attitude in Table 72. Although the initial production of such verbalization tends to be solicited by the teacher, the student is generally free to extend the narration for as long as he wishes. The highly significant correlations for four classes, at least during the Sketch, indicate that those students who possessed favorable attitudes toward second language learning

tended to verbalize extensively given the opportunity. No clear explanation for the disappearance of the relationship during the Mechanism is evident. While the total amount of higher level cognitive verbalization remained stable or increased over time for all classes no significant correlations resulted, suggesting that the pattern of teacher solicitation may have been responsible. The teachers may have called upon more students or ones with less favorable attitudes. Other plausible explanations may be that students with high attitudes did not verbalize to the same extent during the Mechanism, or conversely, that all students, regardless of attitude, verbalized for longer periods of time thereby increasing the frequencies on which the correlations are based.

During the Sketch solicitation and reinforcement were also significantly correlated with attitude for classes C1 (r_s = 0.54, r_r = 0.53) and D2 (r_s = 0.78, r_r = 0.55). These results are substantially different from those found for classes A1 and B1 indicating that the verbalization of classes C1 and D2 tended to be related directly to solicitation whereas the participation of classes A1 and B1 tended to be more extended in length since correspondingly significant correlations between solicitation and attitude were not found. During the Mechanism, a significant relationship between reinforcement and attitude was found for classes A1 (r = -0.40) and B1 (r = 0.51). Since the most common form of reinforcement found for teacher A was unspecified praise (002), a negative correlation is not unexpected. Teacher B, on the other hand, apparently provided students who were favorably disposed toward second language learning

with higher cognitive level feedback.

Table 70 presents the correlations between achievement and
the participation, solicitation, and reinforcement of application
and higher mental processes for each class during the Sketch and the
Mechanism. Correlations between participation and all three
achievement tests which were found for discussion also occurred
for application and higher mental processes (and divergent verbal-
ization, Table 73). These correlations are as follows: classes
B2 ($r_{S1} = 0.58$, $r_{S2} = 0.57$, $r_M = 0.49$) and C1 ($r_{S1} = 0.55$,
$r_{S2} = 0.45$, $r_M = 0.46$), and the aggregate ($r_{S1} = 0.33$, $r_{S2} = 0.37$,
$r_M = 0.21$). The correlations between participation and post-test
achievement also reached significance for classes A1 ($r = 0.40$) and
D2 ($r = 0.48$). The correlation between discussion and post-test
achievement was identical for class D2. Significant correlations
between solicitation and the pre-test were found for classes C1
($r = 0.49$) and D2 ($r = 0.56$), and the aggregate ($r = 0.25$) and
the post-test for classes B2 ($r = 0.47$) and C1 ($r = 0.38$), and the
aggregate ($r = 0.20$). For both the pre- and post-test, reinforce-
ment was significantly correlated with achievement for the aggre-
gate ($r_{S1} = 0.26$, $r_{S2} = 0.21$) and class D2 ($r_{S1} = 0.56$, $r_{S2} = 0.56$).
Only the correlation between reinforcement and the pre-test reached
statistical significance for class C1 ($r = 0.46$). Student partici-
pation classified according to the higher cognitive levels of the
THOUGHT dimension appears to be positively associated with achieve-
ment. Since this result was not found for knowledge and comprehen-
sion, the hierarchical nature of cognitive functioning appears to

Table 70

Pearson Product-Moment Correlation Coefficients Between Achievement and the Participation, Solicitation, and Reinforcement of Application and Higher Mental Processes for Each Class During the Sketch and the Mechanism

| | Sketch | | | | | | Mechanism | | |
| | Pre-test | | | Post-test | | | Post-test | | |
Class	Part	Sol	Reinf	Part	Sol	Reinf	Part	Sol	Reinf
A1	.06	.05	.32	.40*	-.07	.34	.18	.06	.04
A2	.06	.04	.00	.08	.27	.00	.29	-.29	.03
B1	.16	-.14	.25	.26	-.04	.34	.10	.29	.27
B2	.58**	.44	.41	.57**	.47*	.43	.49*	.30	.18
C1	.55**	.49**	.46*	.45*	.38*	.36	.46**	.06	.13
C2	.34	.06	.09	-.02	-.03	-.31	-.15	-.04	-.18
D1	.37	.17	-.11	.39	.21	.30	-.25	-.17	-.06
D2	.33	.56*	.56*	.48*	.39	.56**	.31	.08	.00
Aggregate	.33**	.25**	.26**	.37**	.20**	.21**	.21**	.08	.07

*p ≤ .05; **p ≤ .01. Refer to Table 49 for the N's for each achievement test.

have been maintained. While the apparent integration of levels of knowledge appears to have been positively related to success, these results are based only on actual frequency and type of verbalization in the class. The kind of mental functioning which occurred for the students when they were not participating verbally cannot be ascertained.

Class C1 exhibited a cognitive pattern which was different from the other seven classes. Fully 35 correlations between the thought classifications and the criterion measures reached statistical significance. Attitudinal correlations which were consistent over all observational variables of participation, solicitation, and reinforcement were found only for knowledge and comprehension although unspecified solicitation and reinforcement exhibited a similar pattern with respect to attitude. Correlations between application and higher mental processes and achievement were the only ones which persisted over all three achievement measures. Consistencies between content and thought variables have already been discussed.

A slight increase in the number of significant correlations for the aggregate occurred. Whereas 24 were found for content correlations, 29 were found for thought-related correlations. Solicitation and unspecified thought were significantly correlated over all three achievement tests and over time for attitude. Correlations which were associated with content variables have also been discussed.

While only one consistent class pattern over all achievemennt measures was found for the content variables (class B2 for discussion),

two were found for thought. Unspecified thought and reinforcement were significantly correlated over time for attitude and over all achievement tests for class A1. Furthermore, positive correlations between the frequency of participation of higher level cognitive verbalization (application and higher mental processes) and all three achievement tests were significant for class B2. Although no significant correlations were found between aptitude and content for any class, eight significant correlations were found between thought and aptitude indicating differing relationships between content and thought with respect to the criteria. Examination of functional differences is explored in the following question.

VERBAL FUNCTIONS

While the previous two subsections have simultaneously presented the results of the participation, solicitation, and reinforcement of each content and thought variable submitted to correlational analysis, some reorganization of tables is required in this section due to the nature of verbal functions. Since teacher and student verbal functions are discrete, the participation variable includes the classification of student convergent, divergent, and total verbalization, while the solicitation and reinforcement variables include teacher functional categorizations of praise (reinforcement only), use of ideas, questions, information and correction, and verbal directions. Separate tables for participation are provided. Student verbalization is examined first, followed by the exploration of teacher solicitation and reinforcement with respect to the students.

Question 12. What relationships exist between the parti-cipation, solicitation, and reinforcement of selected VERBAL FUNCTION variables and aptitude, attitude, and achievement measures for each class during the Sketch and the Mechanism?

Tables 71 to 73 present the correlations between student participation and aptitude, attitude, and achievement, respectively. Tables 74 to 76 report the correlations between teacher solicitation and reinforcement of student verbalization and the student criterion measures.

Student Participation. Table 71 presents the correlations between aptitude and convergent, divergent, and total participation for each class during the Sketch and the Mechanism. Only one significant class correlation was found. Divergent verbalization and aptitude were significantly correlated for class C1 (r = 0.39) during the Sketch. Both divergent (r = 0.25) and total participa-tion (r = 0.15) were correlated at the accepted levels of statis-tical significance for the aggregate during the Sketch. This finding concurs with the generally non-significant correlations found between aptitude and observational variables, namely, that aptitude does not appear to be closely related to the amount of student verbalization.

Table 72 presents the correlations between attitude and con-vergent, divergent, and total participation for each class during the Sketch and the Mechanism. All six correlations for class C1 reached statistical significance. This finding could be anticipated on the basis of the earlier results for this class. For the aggre-gate, only convergent verbalization and attitude during the Mechanism

Table 71

Pearson Product-Moment Correlation Coefficients Between Aptitude and
Convergent, Divergent, and Total Participation for Each Class
During the Sketch and the Mechanism

Class	Sketch			Mechanism		
	Con	Div	Total	Con	Div	Total
A1	.09	.25	.16	.15	.20	.20
A2	.03	-.16	-.02	-.33	-.18	-.30
B1	.06	.35	.16	-.18	.16	-.04
B2	.08	.28	.18	-.10	.23	.07
C1	.15	.39*	.20	-.13	.12	-.07
C2	.24	.22	.25	.04	-.01	.03
D1	-.06	.36	.14	.10	-.25	-.02
D2	-.12	.25	-.00	-.01	.27	.09
Aggregate	.09	.25**	.15*	-.06	.07	-.01

*p ≤ .05; **p ≤ .01. Refer to Table 47 for the N's for the aptitude test.

Table 72

Pearson Product-Moment Correlation Coefficients Between Attitude and
Convergent, Divergent, and Total Participation for Each Class
During the Sketch and the Mechanism

Class	Sketch			Mechanism		
	Con	Div	Total	Con	Div	Total
A1	.33	.62**	.47*	.33	.19	.31
A2	-.03	-.24	-.09	-.12	-.14	-.15
B1	.39	.56**	.48*	.13	.02	.09
B2	-.12	.22	.09	-.34	-.12	-.30
C1	.53**	.54**	.55**	.50**	.42**	.50**
C2	.11	-.22	.06	.24	.16	.22
D1	.22	.24	.29	.17	.03	.14
D2	.20	.57**	.35	-.14	.16	-.05
Aggregate	.18**	.31**	.25**	.14	.18*	.18**

*p ≤ .05; **p ≤ .01. Refer to Table 48 for the N's for the attitude test.

(r = 0.14) were not significantly correlated suggesting that globally, the amount of verbalization produced by the students is positively associated with attitude. During the Sketch, divergent verbalization and attitude were significantly correlated for classes A1 (r = 0.62), B1 (r = 0.56), and D2 (r = 0.57). These correlations are essentially the same in scope, direction, and magnitude as those found between attitude and discussion and higher cognitive processes indicating that these classifications are intimately related. Given the opportunity to verbalize freely and extensively, students with positive attitudes toward learning French did so in four classes during the Sketch. This finding suggests that making the most of the classroom learning experience may require a favorable predisposition on the part of the students especially since it is primarily in the production of divergent verbalization that the student has occasion to use the language creatively. Although the relationship was not as strong as that between divergent verbalization and attitude, correlations between total participation and attitude also reached statistical significance for classes A1 (r = 0.47) and B1 (r = 0.48).

Table 73 presents the correlations between achievement and convergent, divergent, and total participation for each class during the Sketch and the Mechanism. Consistent over all three achievement tests, divergent behavior was significantly correlated with achievement for classes B2 (r_{S1} = 0.54, r_{S2} = 0.58, r_M = 0.50) and C1 (r_{S1} = 0.54, r_{S2} = 0.39, r_M = 0.39). The results for class C1 are compatible with those found for attitude, i.e., students who are both partial toward French and scholastically proficient produce divergent

Table 73

Pearson Product-Moment Correlation Coefficients Between Achievement and Convergent, Divergent, and Total Participation for Each Class During the Sketch and the Mechanism

Class	Sketch Pre-test			Sketch Post-test			Mechanism Post-test		
	Con	Div	Total	Con	Div	Total	Con	Div	Total
A1	.39	.11	.35	.20	.32	.27	.23	.17	.24
A2	.27	.11	.29	.07	.11	.09	.19	.28	.28
B1	-.11	.03	-.07	.15	.28	.21	.18	.11	.15
B2	.27	.54*	.44	.33	.58**	.50*	-.22	.50*	.15
C1	.51**	.54**	.53**	.42*	.39*	.43*	.23	.39*	.28
C2	.31	.19	.31	.38	-.03	.32	.27	.01	.18
D1	-.07	.39	.14	.37	.44*	.52*	-.04	-.33	-.17
D2	-.04	.21	.05	-.01	.39	.14	.16	.45*	.27
Aggregate	.24**	.33**	.31**	.21**	.38**	.30**	.10	.22**	.17*

*$p \leq .05$; **$p \leq .01$. Refer to Table 49 for the N's for each achievement test.

verbalization. Students in classes A1 and B1 who were also favorably disposed toward learning French produced divergent verbal behavior as well. However, achievement was not significantly affected. Furthermore, significant correlations between attitude and divergent verbalization were not found for class B2 yet language competence was positively related to the production of divergent verbalization. These rather enigmatic results indicate that the postulation of causal relationships between verbal behavior and criteria is probably premature in the present study.

Sporadic significant correlations were also found between divergent verbalization and achievement for class D1 ($r = 0.44$) on the post-test and class D2 ($r = 0.45$) on the mechanism test. Moreover, total participation was significantly correlated with achievement on both the pre- and post-tests for class C1 ($r_{S1} = 0.53$, $r_{S2} = 0.43$), and on the post-test for classes B2 ($r = 0.50$) and D1 ($r = 0.52$). Convergent behavior and achievement were significantly correlated only on the pre- and post-tests for class C1 ($r_{S1} = 0.51$, $r_{S2} = 0.42$). With the exception of convergent verbalization and achievement on the mechanism test, all aggregate correlations were significant indicating that generally a positive relationship exists between student verbalization and achievement. The strongest relationship was found between divergent verbalization and achievement testifying to the pre-eminence of verbalization which is primarily student-controlled with respect to successful learning.

Teacher Solicitation and Reinforcement. Table 74 presents the correlations between aptitude and the solicitation and reinforcement of teacher verbal functions for each class during the

Table 74

Pearson Product-Moment Correlation Coefficients Between Aptitude and the Solicitation and Reinforcement of Selected Teacher Verbal Functions for Each Class During the Sketch and the Mechanism

Sketch

Class	Praise Reinf	Use of Ideas Sol	Use of Ideas Reinf	Questions Sol	Questions Reinf	Info & Corr Sol	Info & Corr Reinf	Directions Sol	Directions Reinf
A1	.25	-.04	.02	.28	-.14	.06	-.06	-.03	-.02
A2	.15	.16	.08	.06	-.33	-.02	-.03	.01	.03
B1	-.05	-.08	-.18	-.02	-.24	.02	.08	.05	.30
B2	.04	.08	.19	.10	-.06	-.09	-.04	-.03	-.12
C1	.15	.32	.34	.20	.12	.14	.25	-.05	.16
C2	.35	.08	-.01	.31	.31	.05	.06	.18	.06
D1	.14	.10	-.08	-.08	-.14	-.07	.00	.26	.32
D2	.27	.29	-.20	-.06	-.54*	-.30	-.43	-.06	.14
Aggregate	.05	.02	-.01	.17*	.17*	-.08	-.04	.03	.15*

Mechanism

Class	Praise Reinf	Use of Ideas Sol	Use of Ideas Reinf	Questions Sol	Questions Reinf	Info & Corr Sol	Info & Corr Reinf	Directions Sol	Directions Reinf
A1	.31	.32	.26	.30	.15	-.03	-.08	.18	-.08
A2	.07	-.04	-.22	.07	-.07	-.47*	-.48*	-.35	-.22
B1	-.12	.43*	.24	-.09	.02	-.20	-.04	.09	-.03
B2	.03	-.08	-.26	-.24	-.36	.10	.08	.06	-.18
C1	.05	.26	.07	.02	-.00	-.29	-.21	-.17	-.19
C2	.18	.01	-.07	.29	.29	-.46*	-.38	.08	.20
D1	.08	-.09	-.08	.00	.02	-.08	-.23	.14	-.03
D2	.34	.20	.32	.21	-.39	-.38	-.37	.58**	.14
Aggregate	-.03	.06	.03	.12	.15*	-.27**	-.25**	.01	.03

*p ≤ .05; **p ≤ .01. Refer to Table 47 for the N's for the aptitude test.

Sketch and the Mechanism. Use of ideas for solicitation purposes was significantly correlated with aptitude for class B1 (r = 0.43) during the Mechanism, implying a tendency to call upon high ability students to develop their ideas. During the Sketch, a negative relationship between reinforcement questioning and aptitude for class D2 (r = −0.54) reached statistical significance indicating that the teacher tended to reiterate the question or call upon others if the student could not answer. A positive relationship between questioning and aptitude existed for the aggregate both for solicitation (r = 0.17) and reinforcement (r = 0.17) during the Sketch and reinforcement only (r = 0.15) during the Mechanism. Negative correlations reaching the 0.05 level of statistical significance were found for the use of information and correction for both solicitation and reinforcement purposes for class A2 (r_s = −0.47, r_r = −0.48) and solicitation for class C2 (r = −0.46). In addition, this negative relationship was found for the aggregate (r_s = −0.27, r_r = −0.25) during the Mechanism suggesting that in general low ability students tended to receive more information and correction than high ability students. This finding is in keeping with earlier results which have suggested that different students may have participated during the Mechanism. Apparently a general tendency seemed to be the involvement of a larger number of students thereby affecting the correlations between the verbalization distribution and interactive sequences. Whether this pattern was intentional or fortuitous is unknown. While a positive correlation between aptitude and directions reached statistical significance for the aggregate

during the Sketch (r = 0.15) the relationship disappeared during the Mechanism. A significant correlation between aptitude and directions was found for class D2 (r = 0.58) during the Mechanism.

Generally, aptitude appeared to be related to teacher verbal functions indicating that the type of student response seems to determine the teacher reaction. This was particularly evident for the use of information and correction which tend to serve a dual functional purpose. If a student is unable to reply, teachers tend to reiterate the solicitation, call on someone else, or provide information. Since aptitude was found to be positively correlated with achievement for all classes at some point in time, it is a reasonable assumption that verbal errors are due in part to low aptitude which would tend to explain the negative correlations found in this table.

Presented in Table 75 are the correlations between attitude and the solicitation and reinforcement of selected teacher variables for each class during the Sketch and the Mechanism. All correlations which reached statistical significance were positive with the exception of one* suggesting a differential relationship between teacher verbalization and student aptitude and attitude. With the exception of use of ideas during the Mechanism, all correlations both for solicitation and reinforcement were statistically significant for class C1. This finding substantiates the close link between the verbalization pattern of the teacher and the attitude exhibited by the students. Since class C1 was the largest (N = 30)

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*The correlation between reinforcement questioning and attitude for class D2 (r =-0.45).

Table 75

Pearson Product-Moment Correlation Coefficients Between Attitude and the Solicitation and Reinforcement of Selected Teacher Verbal Functions for Each Class During the Sketch and the Mechanism

Sketch

Class	Praise Reinf	Use of Ideas Sol	Use of Ideas Reinf	Questions Sol	Questions Reinf	Info & Corr Sol	Info & Corr Reinf	Directions Sol	Directions Reinf
A1	.46*	.15	.17	.40*	.06	.24	.26	.17	.04
A2	-.04	.16	.15	-.07	.04	.05	-.01	-.28	-.03
B1	.28	.42	.27	.17	.19	.28	.41	.16	.16
B2	-.08	-.04	.00	-.16	-.39	-.11	-.22	-.04	-.23
C1	.56**	.51**	.49**	.52**	.50**	.44*	.44*	.54**	.58**
C2	.11	-.20	-.06	-.08	.02	.01	.08	.26	.16
D1	.18	.33	.25	-.07	-.09	.29	.16	.48*	.48*
D2	.46*	.48*	.34	.27	-.23	-.15	-.23	.09	.33
Aggregate	.16*	.10	.07	.17*	.14*	.07	.09	.19**	.19**

Mechanism

Class	Praise Reinf	Use of Ideas Sol	Use of Ideas Reinf	Questions Sol	Questions Reinf	Info & Corr Sol	Info & Corr Reinf	Directions Sol	Directions Reinf
A1	.47*	.28	.13	.46*	.23	.22	.16	.13	-.03
A2	.11	.15	-.06	.00	.00	-.19	-.25	-.13	-.16
B1	.16	.24	.18	.03	-.05	.32	.23	.17	.00
B2	-.24	.05	-.13	-.18	-.23	-.33	-.39	-.14	-.22
C1	.49**	.28	.35	.55**	.49**	.40*	.47**	.45**	.43*
C2	.37	.39	.30	.25	.22	-.18	-.09	.23	.34
D1	.16	.15	.14	.14	.12	.11	-.06	.35	.34
D2	.21	-.17	-.05	-.02	-.45*	-.18	-.08	.12	.11
Aggregate	.10	.13	.12	.22**	.18**	.01	.02	.10	.14*

*p $\leq$ .05; **p $\leq$ .01. Refer to Table 48 for the N's for the attitude test.

in the study, one might hypothesize about the effect of class size on teacher behavior. Students provided the opportunity to participate were those who displayed the most favorable attitudes toward learning the second language. Once the interpretation of results had begun, the investigator asked teacher C about the students who were generally called upon. The reply confirmed that students who were keenly interested in learning French tended to be invited to participate verbally. At the beginning of the semester, students who apparently enjoyed the language experience volunteered to participate thereby exhibiting a behavioral manifestation of positive attitudes. As the semester progressed, the pattern of calling upon these students seemed to be established. Evidence of positive attitudes, such as hand-raising, did not occur during the observational period so that the investigator was not aware of which students were more favorably inclined toward French. While overt behavior was no longer discernible, the interactive pattern continued.

A consistent pattern over time was found for class A1 between attitude and praise ($r_S = 0.46$, $r_M = 0.47$) and the solicitation of questions ($r_S = 0.40$, $r_M = 0.46$). Apparently a tendency toward praising and calling upon high attitude students in class A1 also existed. A significant correlation between attitude and directions, both for solicitation and reinforcement, was found for class D1 ($r_s = 0.48$, $r_r = 0.48$) during the Sketch. A statistically significant positive correlation between attitude and use of ideas for solicitation was found for class D2 ($r = 0.48$) during the Sketch while a negative correlation between reinforcement questioning ($r = -0.45$)

was found during the Mechanism. Correlations between attitude and verbal functions which were significant for the aggregate over time included questions both for solicitation ($r_S = 0.17$, $r_M = 0.22$), and reinforcement ($r_S = 0.14$, $r_M = 0.18$), and directions for reinforcement ($r_S = 0.19$, $r_M = 0.14$). During the Sketch only, significant correlations between attitude and praise ($r = 0.16$) and directions for solicitation ($r = 0.19$) were found. It appears that the only verbal behavior which tended to be used globally over time in association with positive student attitudes was calling upon students to answer questions, which also happened to be the principal solicitation strategy for all classes.

Table 76 presents the correlations between achievement and the solicitation and reinforcement of selected teacher verbal functions for each class during the Sketch and the Mechanism. The only consistent patterns over all three tests for the aggregate consisted of questions and directions both of which tended to be associated with the actual production of student verbalization, i.e., opportunity to participate. This finding corresponds to the consistency across all tests of divergent and total participation for the aggregate. Evidently student participation, which tended to be solicited, was positively associated with achievement. While praise and use of ideas were positively related to student success for the pre- and post-tests, the correlations disappeared during the Mechanism. Moreover, a significant correlation in a negative direction occurred between information and correction and the mechanism test ($r_S = -0.25$, $r_r = -0.19$) indicating that students who did less well received more information. The possibility that

Table 76

Pearson Product-Moment Correlation Coefficients Between Achievement and the Solicitation and
Reinforcement of Selected Teacher Verbal Functions for Each Class During the Sketch and
the Mechanism

	Sketch Pre-test								
Class	Praise Reinf	Use of Ideas Sol	Reinf	Questions Sol	Reinf	Info & Corr Sol	Reinf	Directions Sol	Reinf
A1	.59**	.30	.40	.61**	.02	.14	.09	.48*	.29
A2	.37	.27	.24	.33	-.05	.14	.15	.10	.12
B1	-.02	-.01	.03	.10	-.27	-.55*	-.47*	-.05	.09
B2	.34	.44	.34	.20	.11	.13	.11	.43	.08
C1	.49**	.44*	.49**	.50**	.48**	.47**	.45*	.43*	.51**
C2	.28	.22	.18	.36	.39	.15	.16	.23	.31
D1	.05	.36	.21	-.08	-.07	-.10	-.15	.16	.29
D2	.46	.35	-.11	.20	-.47	-.31	-.38	-.13	.02
Aggregate	.24**	.30**	.29**	.28**	.19*	-.01	-.02	.27**	.26**
	Sketch Post-test								
A1	.44*	.10	.21	.45*	-.14	-.04	-.09	.18	-.04
A2	.29	.14	.18	.15	-.39	-.06	-.03	.10	-.14
B1	.29	.15	.23	.32	-.07	-.24	-.16	.05	.19
B2	.37	.40	.33	.36	.21	.10	.03	.45	.14
C1	.38*	.32	.31	.42*	.42*	.31	.36	.38*	.36
C2	.37	.01	-.09	.30	.30	.16	.19	.50**	.29
D1	.53*	.52**	.35	.43*	.26	.02	.14	.48*	.24
D2	.50*	.45*	.08	.15	-.50*	-.29	-.39	.17	.27
Aggregate	.26**	.24**	.21**	.24**	.15*	-.08	-.06	.30**	.19**
	Mechanism Post-test								
A1	.45*	.20	.21	.47*	.15	-.00	-.01	.28	-.26
A2	.53*	.23	.15	.51*	.17	-.07	-.05	-.09	-.07
B1	.23	.32	.23	.18	.03	-.14	-.09	.55**	.20
B2	.04	.12	.04	.13	-.01	-.30	-.27	.58**	-.03
C1	.34	.45**	.39*	.35	.27	.01	.13	.21	.14
C2	.40*	.26	.11	.38	.33	-.26	-.10	.24	.27
D1	.01	-.37	-.10	-.01	.10	-.33	-.43*	.19	-.02
D2	.41	.16	.15	.22	-.26	-.07	-.07	.50	.19
Aggregate	.13	.12	.14	.22**	.16*	-.25**	-.19**	.29**	.18*

*p ≤ .05; **p ≤ .01. Refer to Table 49 for the N for each achievement test.

different student verbalization patterns were involved during the Mechanism has already been discussed.

Solicitation of questions and of praise were both significantly correlated over all achievement tests for class A1. This finding agrees with the correlations associated with attitude indicating that successful achievement was related both to teacher behavior and attitude. While all correlations between teacher behavior and achievement were statistically significant for the pretest, an intermittent pattern was found for the subsequent two achievement tests for class C1 suggesting that achievement is related to factors other than teacher behavior alone.

Whereas few significant correlations between observational and criterion variables for both classes instructed by the same teacher have been found with respect to student verbalization and criteria, some consistency between classes for teacher strategy and achievement occurred. For the post-test, significant correlations between praise and achievement were found for teacher D ($r_{D1} = 0.53$, $r_{D2} = 0.50$) as was the correlation between the solicitation of student ideas and achievement ($r_{D1} = 0.52$, $r_{D2} = 0.45$). The correlations between post-test achievement and verbal directive solicitation for teacher C ($r_{C1} = 0.38$, $r_{C2} = 0.50$) also reached statistical significance for both classes. With respect to the mechanism test, correlations between praise and achievement persisted over both classes for teacher A ($r_{A1} = 0.45$, $r_{A2} = 0.53$) as did the solicitation of questions ($r_{A1} = 0.47$, $r_{A2} = 0.51$). The correlations between the use of verbal directions used for solicitation

purposes and mechanism achievement were also consistently signi-
ficant between classes for teacher B (r_{B1} = 0.55, r_{B2} = 0.58).
The finding that these strategic patterns did not markedly affect
actual student participation attests to the diversity of the stu-
dent composition of the classes. Furthermore, the lack of
consistency of between-class correlational patterns over time
implies that their occurrence may be casual.

A total of 45 significant correlations between verbal func-
tions and student criteria were found for class C1. Significant
correlations which persisted over time were found between attitude
and all teacher and student verbal functions with the exception of
teacher use of student ideas. All possible correlations between
pre-test achievement and verbal functions were statistically signi-
ficant. Although ten correlations out of a possible 24 reached
significance for the post and mechanism tests, no consistent pattern
emerged. The large size of the class (N = 30) appeared to be a
major factor in the number of significant correlations found.

Dispersed among the remaining seven classes, 51 significant
correlations between verbal functions and aptitude, attitude, and
achievement were found. Significant correlations between both
attitude and achievement were found for praise and solicitation ques-
tions for class A1. These were the only correlations which con-
sistently reached statistical significance for any given class over
all attitude and achievement criteria. Divergent behavior and
achievement were significantly correlated over all three achievement
tests for class B2. The remaining significant correlations did not

persist over any given criterion.

Significant correlations between student criteria and verbal functions numbered 49 for the aggregate. Both attitude and achievement were significantly correlated with divergent and total participation as well as teacher questions used for solicitation and reinforcement. Teacher verbal directions serving the dual solicitation-reinforcement function were also significantly correlated over all three achievement tests. Other correlations which reached statistical significance were sporadically distributed among the observational variables and student criteria.

SUMMARY

This chapter has presented the correlational results of the study. The intercorrelations among the three achievement tests indicated that all correlations were statistically significant with the exception of the pre-post comparison for classes C2 and D1. Significant correlations between aptitude and attitude were found for classes A2, D2, and the aggregate. Aptitude was significantly correlated with achievement for all classes on at least one test (B2), although more usually on two tests (A1, A2, B1, C2). All three achievement tests were significantly correlated with aptitude for classes C1, D1, and D2. Attitude was significantly correlated with all three achievement tests for classes C1 and D2.

Table 77 presents a summary of the significant correlations between the observationally-derived variables and aptitude, attitude, and achievement for each class and the aggregate during the Sketch

Table 77

Summary of Statistically Significant Correlations Between Observational Variables and Student
Criterion Measures for Each Class and the Aggregate During the Sketch and the Mechanism

	Aptitude						Attitude						Achievement								
	Sketch			Mechanism			Sketch			Mechanism			Sketch						Mechanism		
													Pre-test			Post-test			Post-test		
	P	S	R	P	S	R	P	S	R	P	S	R	P	S	R	P	S	R	P	S	R
CONTENT																					
Structure	AGG						AGG														
								A1													
							C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1			
Vocabulary													AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG
													A1	A1							
																			A2	A2	A2
																				B1	
															B2						
							C1	C1	C1	C1	C1	C1	C1	C1	C1			C1		C1	C1
															C2						
Discussion	AGG						AGG			AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG		AGG
							A1						A1								
							B1														
													B2		B2				B2	B2	B2
							C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1		C1	C1	C1
													C2								
							D1									D1	D1	D1		D1	
							D2	D2	D2							D2	D2			D2	
THOUGHT																					
No Discernible Thought		AGG		AGG				AGG	AGG		AGG	AGG		AGG	AGG		AGG	AGG	AGG	AGG	
								A1				A1		A1			A1				A1
				A2																	
											B2		B2			B2					
	C1							C1	C1		C1	C1	C1	C1	C1		C1	C1			
	D1															D1	D1	D1			
						D2														D2	
Knowledge and Comprehension							AGG	AGG		AGG			AGG	AGG	AGG	AGG	AGG				
							B1														
							C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1			
Application and Higher Mental Processes	AGG						AGG						AGG	AGG	AGG	AGG	AGG	AGG	AGG	AGG	
		A1					A1				A1			A1							
							B1				B1										
													B2			B2	B2		B2		
	C1	C1	C1				C1	C1	C1	C1			C1	C1	C1	C1	C1		C1		
							D2	D2	D2				D2	D2	D2		D2				
VERBAL FUNCTIONS																					
Convergent							AGG						AGG			AGG					
							C1			C1			C1			C1					
Divergent	AGG						AGG			AGG			AGG			AGG			AGG		
							A1														
							B1														
													B2			B2			B2		
	C1						C1			C1			C1			C1			C1		
																D1					
							D2												D2		
Total	AGG						AGG			AGG			AGG			AGG			AGG		
							A1														
							B1														
																B2					
							C1			C1			C1			C1					
																D1					
Praise								AGG						AGG			AGG				
								A1			A1			A1			A1			A1	
																				A2	
								C1			C1			C1			C1			C2	
																	D1				
								D2									D2				
Use of Ideas													AGG	AGG		AGG	AGG				
				B1																	
							C1	C1					C1	C1					C1	C1	
																D1					
							D2						D2								
Questions		AGG	AGG			AGG	AGG	AGG		AGG	AGG		AGG	AGG		AGG	AGG		AGG	AGG	
							A1				A1		A1			A1			A1		
																			A2		
							C1	C1		C1	C1		C1	C1		C1	C1				
																D1					
		D2									D2					D2					
Information and Correction				AGG	AGG														AGG	AGG	
				A2	A2																
													B1	B1							
							C1	C1		C1	C1		C1	C1							
				C2																D1	
Directions			AGG				AGG	AGG				AGG	AGG	AGG		AGG	AGG		AGG	AGG	
													A1								
																			B1		
																			B2		
							C1	C1		C1	C1		C1	C1		C1					
																C2					
							D1	D1								D1					
				D2															D2		

P = Participation, S = Solicitation, R = Reinforcement, AGG = Aggregate, A1 . . . D2 = Class A1 to Class D2.

and the Mechanism. <u>A total of 210 correlations were computed for each class and for the aggregate.</u> Of the total number possible, 102 correlations reached statistical significance for the aggregate indicating that approximately half of all variables were related when the students from all eight classes were combined. Aptitude appeared to be the variable which was least correlated with the observational data. The most prevalent significant relationships were found between achievement and observationally-derived variables. Class C1 produced many more significant correlations than any other individual class. Fully 118 correlations were statistically significant. The range in the number of statistically significant correlations for the remaining seven classes was found to be a low of 5 for class C2 to a high of 27 for class A1. The diversity in the composition of the students in each class appeared to influence the number of relationships which existed. Possible reasons for the correlations were presented in the discussion of each variable.

CHAPTER IX

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY

The Problem

This study was designed to examine the multidimensional nature of teacher-student verbal interaction during instruction in second language classrooms in order to provide some indication of the complexity of the teaching-learning process. The three major purposes of the study were:

1) to develop an appropriate multidimensional category system specifically for second language instruction,

2) to describe teacher-student verbal interaction by means of the observational instrument, and

3) to relate selected observationally-derived variables to measures of student aptitude, attitude, and achievement.

The L2 System

The L2 (Second Language) System was developed specifically to provide some indication of the multidimensional nature of teacher-student verbal interaction. Its primary goals are to preserve as much of the complexity of the teaching-learning process as is possible, and to provide a focus on the individual learner. The observational instrument has been developed to reflect the unique attributes of the

teaching-learning process in second language settings while borrowing from observational systems designed for other instructional settings.

The category system is based primarily on the work of Flanders and Taba, although it also draws upon the work of Brophy and Good, Bloom, Gallagher, and the field of applied linguistics. It represents a synthesis of affective, cognitive, procedural, and content dimensions in which dyadic interactions between teacher and students and students and students are preserved and treated as frequency measures. The L2 System, summarized in Figure 7, is based on the assumptions that 1) verbal behavior is a representative sample of total classroom behavior, 2) the majority of teacher-student verbal interactions are dyadic, and 3) the teaching-learning process cannot adequately be described by means of any single psychological factor such as affect or cognition. Verbalizations are categorized by means of a three-digit code, in which each number in the code represents a category in each of the CONTENT, THOUGHT, and VERBAL FUNCTION dimensions. Individual students are identified by means of a standardized seating plan which permits observations to be treated statistically as frequency measures of individual verbalizations. Verbal functions and student identity are coded directly in the classroom while the dimensions of content and thought are added to the categorization from the audiotapes recorded during the observational sessions.

Procedure

Four high school teachers of Voix et Images de France (VIF) at the grade ten French 11 level, volunteered to take part in the study.

VERBAL FUNCTIONS*

CONTENT*

0. No discernible content
1. Phonology
2. Morphology
3. Syntax
4. Vocabulary
5. Discussion
6. Commentary

THOUGHT*

0. No discernible thought
1. Knowledge
2. Comprehension
3. Application
4. Higher Mental Processes

Teacher Talk

1. Acknowledgement of Feelings
2. Praise or Encouragement
2r. Repetitive Praise
3. Reiteration of a Student Idea
3c. Clarification of a Student Idea
3x. Extension of a Student Idea
4. Convergent Question
4d. Divergent Question
4p. Personal Question
5. Information
5b. Belief or Opinion
5c. Correction
5p. Procedure
6. Verbal Direction

6b. Behavioral Direction
7. Verbal Criticism
7b. Behavioral Criticism

Student Talk

8. Convergent Answer
8q. Convergent Question
9. Divergent Response or Comment
9q. Divergent Question
9c. Student-to-student Assistance
9e. Comment in English

10. Non-verbal Activity

*One category from each dimension is used to classify every event.

Figure 7

A Summary of the Categories of the L2 System

Each teacher had a minimum of five years of experience teaching VIF and some previous knowledge of the Flanders system of inter-action analysis associated with an earlier in-service training study. The teachers taught in three semesterized high schools in Edmonton, Alberta. Each teacher taught the Sketch and Mechanism of Lesson 17 of Voix et Images de France to two classes of grade ten French 11 students. Each of the eight classes was observed for one-half hour daily over the period of one week while the classes were engaged in the transposition of the Sketch of Lesson 17. The identical observational procedure was followed while the students were involved in the transposition of the Mechanism of Lesson 17. A total of forty hours of observational data was recorded. While verbal functions and student identification were coded directly in the classroom, the content and thought categories were added from the analysis of the audiotapes recorded during the observational sessions.

A battery of aptitude, attitude, and achievement instruments was administered to the students. These scores were correlated with observational data collected for each student. The Modern Language Aptitude Test and selected attitude scales from the National Test Bettery were administered to the students prior to the observational period. Three criterion-referenced oral production tests designed to test the material in Lesson 17 of Voix et Images de France were developed specifically for the study. Two of the tests were statistic-ally parallel and were concerned with the material of the Sketch. One of these parallel forms was administered to the students prior to the introduction of the Sketch, while the other form was administered upon

its completion. The third test pertained to the material of the Mechanism and was administered to the students upon completion of the unit.

Descriptive Results

The pace of instruction, although consistent between classes and over time for each teacher, varied from 21 to 33 events per minute. Despite the variation in the total verbal participation of individual students in all eight classes, the average amount of student verbalization calculated on the basis of each teacher's pace of instruction ranged from 1.7 to 2.8 minutes in each two and one-half hour observational period.

All L2 categorical classifications were found to be present for some of the classes. However, a few categorizations tended to be employed rather infrequently during the transpositional phase of VIF instruction. In the CONTENT dimension, neither phonology nor commentary was used to any marked degree either by the teachers or the students. Application and higher mental processes classified according to the THOUGHT dimension tended to be utilized minimally by the teachers although a parallel pattern was not found for the students, suggesting that teacher usage of these cognitive categories may serve primarily as a catalyst for student cognitive functioning at these levels. In the VERBAL FUNCTION dimension, teacher behavior associated with feelings, divergent questions, beliefs or opinions, and behavioral criticism occurred only rarely relative to the other functions. Student behaviors of student-to-student assistance and English comments were found infrequently. As neither of these two student verbal

functions is directly under the control of the teacher, their
occurrence appears to be restricted to those students who tend to
verbalize without the explicit direction of the teacher. The main-
tenance of all substantive, cognitive, and functional categories
in the L2 System appears warranted from the descriptive results.
However, due to the limited incidence of certain categories during
transposition, all observational variables were not submitted to
further analysis in the present study.

Some systematic implementation patterns were found across
teachers for the categories of the CONTENT dimension classified by the
L2 System. Three teachers (exception, teacher A) were consistent in
their distributions of content categories during the Sketch and the
Mechanism. All four teachers decreased their use of morphology and
vocabulary and increased their use of syntax over time. Although
teacher variation in distribution was found for all categories, the
greatest discrepancy resulted in the use of vocabulary. Student
substantive distributions tended to be uniform between classes for
each teacher. The only consistent variation over time for all
classes was a decrease in morphology.

L2 classifications of indiscernible content and indiscernible
thought tended to be almost identical for both teachers and students
indicating that, since these two categorizations were usually
associated with one another, some proportion of discourse is strictly
functional in nature. Considerably more unspecified verbalization
was found for the teachers than for students suggesting that although
teachers engage in equivocal functional expression, students tend to

produce verbalization which manifests both content and thought

properties as defined in the L2 System. The most common examples

of unspecified verbal functions for teachers include praise (002),

verbal directions (006), and calling upon a student by name only

(004 or 006), while the most common examples for students include

agreement or disagreement with a teacher comment or query (008).

In the THOUGHT dimension, the majority of teacher verbalization

was found to be either indiscernible or of the knowledge level.

Generally, all teachers were consistent in their production of

unspecified thought, knowledge, and comprehension both during the

Sketch and the Mechanism. While the preponderance of student dis-

course was classified according to the knowledge level for all

classes except A1 and A2 during the Mechanism, differences in cog-

nitive distributions occurred between classes instructed by the same

teacher. Only the students of teacher C exhibited consistent

assignments over all thought categorizations between classes during

the Sketch and the Mechanism. Classes instructed by teachers B and

D also produced congruent distributions during the Mechanism. No

consistent patterns across classes over time were found.

Generally, teacher behavior classified according to the

VERBAL FUNCTION dimension was consistent between classes during both

observational units. Over time, an increase in the use of verbal

direction was found for all teachers except A with a concomitant

decrease in the use of convergent questions for teachers C and D,

and the clarification and extension of student ideas for teacher B.

A fairly narrow range in the utilization of both convergent and

divergent response existed for all classes except A1 and A2 during both the Sketch and the Mechanism. The only consistent behavioral change for all classes was a decrease in convergent response over time.

The descriptive results of the study indicated that while teacher behavior classified according to the categories of the three dimensions of the L2 System tended to be consistent over class and time, the student categorizations did not exhibit an analogous pattern. This discrepancy appeared to be a consequence of the differences in the student composition of the classes.

Structure was found to be the most prevalent form of content solicitation, followed by vocabulary and unspecified content, which tended to reverse their ranks over time, followed by discussion. All teachers ranked knowledge and comprehension as the most common cognitive solicitation, followed by indiscernible thought, and to a much lesser degree, application and higher mental processes. Over time, questions were consistently ranked as the principal form of solicitation. Use of ideas ranked fourth over all teachers, while information and correction, and verbal directions ranked second and third. These classifications indicated that the predominant solicitation strategy consisted of structural or lexical knowledge questions.

Indiscernible content ranked as the fundamental kind of substantive reinforcement for all teachers. Structure, vocabulary, and discussion ranked next in the given order, respectively. While indiscernible content and thought distributions tended to be equivalent, the dominant type of cognitive reinforcement provided to the students was knowledge and comprehension for some classes, and

unspecified cognitive level for others. No consistent pattern emerged with respect to all teachers although each tended to be consistent between classes and over time. Application and higher mental processes ranked lowest for all teachers. Praise was found to be the fundamental kind of reinforcement provided by all teachers during the Sketch and the Mechanism. Information and correction, questions, and use of ideas were also employed for reinforcement purposes. The most common reinforcement received by all students appears to have been unspecified praise (002), followed by structural and lexical knowledge information and correction.

Examination of the proportion of student verbalization which was directly solicited and reinforced indicated that although variations occurred, certain patterns across classes emerged. Structural and lexical student verbalization tended to be solicited and reinforced fairly extensively by all teachers, although teacher C tended to use considerably more unqualified functional solicitation (004) than did the other three teachers. Knowledge and comprehension also tended to be employed fairly consistently between teachers and students, especially for solicitation, indicating that the majority of teacher-student verbal interaction tended to be associated with structural and lexical lower level cognitive manipulation in which the teachers asked questions which the students answered. The student response would be classified as convergent since little freedom of choice in verbalization is permitted in such solicitation. Neither discussion nor application and higher mental processes tended to be directly solicited or reinforced to any great extent. This finding indicates

that these classifications tended to be associated with divergent response which was extended beyond the usual category and/or three second coding interval. Teacher solicitation appeared to serve only a catalytic function in the production of such divergent student verbalization.

The praise functions were found to be associated only with reinforcement, while questions and verbal directions were employed primarily for solicitation. Use of ideas and information and correction tended to serve the dual purpose of solicitation and reinforcement.

Three predominant teacher instructional strategies were found. The primary pattern consisted of a teacher question followed by student convergent verbalization, followed by unspecified praise. These questions tended to be structural or lexical knowledge items. Student convergent verbalization manifested the same substantive and cognitive properties as did the solicitation. A secondary pattern consisted of the same content, thought, and functional attributes with an intermediary teacher reaction to the student response which was subsequently modified by the student based on the teacher's inter-jection. A third pattern appeared to consist of teacher directions followed by discussion of primarily extended divergent student verbalization which tended to be associated with higher level cog-nitive functioning on the part of the students. Some form of teacher reaction occurred in response to the student discourse. Teachers tended to employ fairly characteristic patterns of solicitation and reinforcement. The variation which occurred in the actual distributions of the variables, especially in terms of intra-class variation,

indicated that the patterns were employed globally, and not necessarily with respect to individual students.

Correlational Results

Pearson Product-Moment correlation coefficients between selected observationally-derived variables and student aptitude, attitude and achievement were computed for each class and for the aggregate sample. All 210 correlations were based on individual student frequencies on each selected observational variable and total scores on each criterion measure. Such statistical analysis served to identify the effect of student variation with respect to both observational and criterion variables.

Table 78 presents a summary of the total number of correlations for each class and the aggregate which reached statistical significance ($p \leq 0.05$). The distribution of the correlations is arranged by the dimensions of the L2 System as well as by the criterion measures. Out of a total possible 1,890 correlations, only 333 were significant. While the number of significant correlations ranged anywhere from 5 to 27 for seven of the classes, approximately half were significant for the aggregate sample and for class C1. Only 21 significant correlations were negative indicating a generally positive relationship between verbalization and student criterion measures.

Aptitude appeared to be the criterion measure which was associated least with verbalization in the classes. Correlations which reached statistical significance were infrequent and only sporadically distributed among the classes and over time. Ten of

Table 78

Summary of the Number of Significant Correlations Classified by the L2 Dimensions and the Criterion Measures for Each Class and the Aggregate

Class	L2 Dimensions				Criterion Measures		
	CONTENT (63)*	THOUGHT (63)*	VERBAL FUNCTIONS (84)*	Total (210)*	Aptitude (60)*	Attitude (60)*	Achievement (90)*
A1	5	9	13	27	1	12	14
A2	3	1	4	8	3	0	5
B1	2	3	6	11	1	6	4
B2	6	7	5	18	0	1	17
C1	38	35	45	118	5	54	59
C2	2	0	3	5	1	0	4
D1	5	4	9	18	1	3	14
D2	6	9	11	26	3	10	13
Aggregate	24	29	49	102	13	26	63

*Maximum possible.

the 28 significant correlations were negative.

A functional relationship between attitude and verbalization appeared for the aggregate and class C1. Consistent over time, attitude was significantly correlated with discussion, knowledge and comprehension, and divergent and total participation, as well as indiscernible thought and questions used for solicitation, and questions and directions used for reinforcement. With the exception of six comparisons, attitude was significantly correlated with the participation, solicitation, and reinforcement of all observational variables during the Sketch and the Mechanism for class C1. The only other attitudinal correlation which endured over time included unspecified thought and praise for reinforcement and questions for solicitation for class A1. While attitude appeared to be associated with verbalization in the other six classes, no systemative patterns were found. Only two of the 112 significant correlations were negative indicating that attitude and verbalization are positively associated.

The relationship between achievement and verbalization appeared to be relatively strong. Of the 193 significant correlations, nine were negative. While many incidental correlations occurred, a uniform pattern of significant correlations between observational variables and all three achievement tests were found: 14 for the aggregate, 6 for class C1, 3 for class A1, and 3 for class B2. Of these achieve- ment-verbalization correlations, overlap among classes took place for the following observational variables: discussion, application and higher mental processes, and divergent student participation for the aggregate, and classes B2 and C1. This finding indicates that generally

these three categorizations, one from each dimension of the L2 System, tended to occur together (539 and 549). Furthermore, the number of significant correlations which occurred for this classification of student verbalization indicates that divergent higher cognitive level discussion is positively asscciated with achievement. The solicitation and reinforcement of discussion were also significantly correlated with all three achievement measures for the aggregate and for class C1. For both of these groups, the reinforcement of vocabulary was also significantly correlated with achievement over all measures. The solicitation of questions was significantly correlated with achievement for the aggregate and class A1.

Although all four teachers were represented, only nine instances of significant correlations on the same variables for both classes of any teacher occurred. This finding indicates that the student composition of the class affects the type of interaction patterns which transpire.

CONCLUSIONS

Verbal Interaction

While few generalizations are possible given the small sample of teachers and students, some tentative conclusions concerning teacher-student verbal interaction appear warranted from the results of the study. During the transposition of Voix et Images de France at the French 11 level, certain categories from each dimension were consistently associated over classes

and teachers. Structure (morphology (2) and syntax (3)) tended
to occur together with knowledge (1) in conjunction with con-
vergent questions (4) and answers (8) (2(3)14 → 2(3)18) testi-
fying to the pre-eminence of structural manipulation during
transposition. Furthermore, the majority of interactive activi-
ties transpired at the linguistic and lower levels of thought
concurrently, indicating the emphasis placed on the knowledge of
the paradigmatic forms of the French language. Teacher ver-
balization tended to function primarily as a catalyst when
student higher cognitive level (application and higher mental
processes) verbalization was produced.

Despite the use of common material for both the Sketch
and the Mechanism, the teachers appeared to organize the in-
structional elements and their sequencing according to their
perception of the linguistic and cognitive needs of the students.
While globally teacher verbalization appeared congruent between
classes, examination of the transactional patterns in each
class indicated that the actual interactive episodes which
developed tended to be determined by the verbalization emitted
by the student to whom a solicitation was addressed. Since
classroom verbal interaction was essentially found to be a pro-
gression of dyadic interactions between the teacher and individual
students, the composition of the class dominated the teacher's
instructional strategies to a marked degree.

Even though the individual student was found to exert
considerable control over the actual teacher verbalization

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associated with his responses, whether or not the student was
initially given the opportunity to participate was determined
by the teacher. Not only was the role of the teacher pervasive in the
determination of which students participated, but also in the
type and extent of student verbalization produced.

Although no systematic associations between observational
data and student criteria were found over all teachers and
classes, certain tendencies appeared. Little relationship between
aptitude and either teacher or student verbalization emerged.
Attitude tended to be associated with verbalization in a positive
manner, i.e., the more favorable the attitude toward learning
French, the more likely a student was called upon to participate.
A positive predisposition toward learning French appeared
especially important in the production of extended divergent
verbalization by the students. Achievement and verbalization
also shared a positive relationship confirming the generally-
held claim that speaking ability is enhanced by actually engaging
in verbal discourse. The relatively few significant correlations
between observationally-derived variables and student criterion
measures for all groups except class C1 and the aggregate
sample verified the complexity of the teaching-learning process--
statistical analysis of the relationships among isolated variables
is not adequate to describe the fundamental diversity of the
individual acts which constitute the instructional process.

Student Participation

The results of the study led to the over-riding conclusion

that all students in the same classroom did not share a common educational experience with respect to their verbal participation and the kind and amount of teacher solicitation and reinforcement received. Since this phenomenon occurred in all eight classes, treating groups of students as equal recipients of a specific teacher strategy in observational research appears unfounded. Moreover, students did not necessarily benefit to the same extent from any instructional activity.

All correlations were calculated on the basis of individual student frequencies for each variable, both observationally-and criterion-related. While a generally positive relationship was found between the quantity of student verbalization and the solicitation and reinforcement associated with it, the quality of the participation appeared more important, particularly with respect to attitude and achievement. Student participation categorized as discussion (5) application or higher mental process (3 or 4) divergent (9) verbalization (539 or 549) was found to be significantly correlated with attitude and achievement for the greatest number of classes. Convergent verbalization associated with linguistic manipulation at the knowledge level was not related to student criteria to any marked degree indicating that the majority of student participation did not appear to be directly related to successful learning. This finding suggests that actual verbalization may not necessarily be a concomitant of achievement. While the analysis of the data was concerned only with overt verbal functioning, it is apparent that students

learned even if they did not participate verbally, i.e., vicarious learning through the mental attention to the interactive activities. A strategy employed at least to some extent by all four teachers consisted of withdrawing substantive and cognitive clues from the solicitation to assist in sustaining the intellectual involvement of students who did not participate verbally.

The need to examine in further detail the observational data and criterion measures of individual students appears to be a major conclusion of this study. Further studies in which both individual student verbalization and criterion scores are examined appear warranted from the results of the present investigation. Should subsequent research produce similar findings, information concerning the nature and extent of individual student differences might become evident.

The L2 System

The description of teacher-student verbal interaction by means of the L2 System provided some indication of the complexity of the teaching-learning process in second language instructional settings. While the analytical procedures reported in this study represent only a fraction of the total analytical procedures possible for the instrument, the results provide justification for the examination of dyadic interaction in second language learning.

Analysis of other second language instructional settings could determine whether or not the relationships which appeared in the present study were generalizable. The effect of level of instruction, i.e., elementary, intermediate, and advanced, on verbal

interaction patterns with respect to categorizations in the CONTENT, THOUGHT, and VERBAL FUNCTION dimensions appears to be an area which warrants further investigation. Furthermore, the influence of the actual language under instruction, might produce different results.

A major limitation of the use of the L2 System to explore verbal instructional processes in second language settings is its complexity. In order to use the instrument effectively, the following observer attributes are required:

1) a sound knowledge of the second language,

2) the ability to apply linguistic science,

3) the ability to differentiate levels of thought,

4) familiarity with the methodology under observation.

Given the above prerequisite observer characteristics, a substantial time commitment is still required to integrate each into a coding procedure. During the early stages of observer training, considerable patience is essential to overcome the seemingly overwhelming amount of information which the system processes. However, once coding facility is attained, it tends to endure.

Despite the obvious limitations cited above, the ultimate utility of the L2 System lies in its ability to describe some of the complexity of overt verbal instructional processes in second language settings. By identifying individual students and their verbal participation as well as the teacher solicitation and re-inforcement associated with it, individual student differences

with respect to the categories of the dimensions of the L2 System become amenable to study. Although this monitoring of the instructional process concerns itself only with the actual verbal manifestation of the affective, cognitive, procedural, and contextual functioning, such analysis serves to explore the relationships among them. While overt verbal behavior may not necessarily reflect covert mental activity, its examination at least provides some indication of cognitive functioning. If a one-to-one relationship between a student and a teacher existed in which the student verbalized all mental operations, perhaps a more accurate representation of covert by overt verbal behavior might be possible. However, given the usual limitations of traditional second language instructional settings in which one teacher is responsible for twenty to thirty students, such analysis is not feasible. The L2 System attempts to investigate instructional interaction by means of verbal behavior which is emitted by the teacher and the students. Analyzing those variables along specific dimensions which appear related to learner outcomes may be a step toward the production of more successful second language learning.

Given the disparity in the type and distribution of individual student verbalization found in the classes, the calculation of means and standard deviations appeared somewhat inappropriate in retrospect. However, since this study was exploratory in nature it was felt that such statistical description might provide some indication of the average amount and range of verbali-

zation associated with the observational variables. Further
research might suggest the use of other measurement procedures
which may be more suitable.

<div align="center">IMPLICATIONS</div>

The Second Language Learner

A major implication of the present study appears to be that
learning a second language is an infinitely complex procedure which
defies accurate description for all students. The myriad of
individual differences found with respect to student observational
and criterion variables tend to refute any claim that all students
can learn in the same way and to the same extent by means of the
same materials and instructional activities. Previous studies
have indicated that personal characteristics such as aptitude and
attitude have been found to be associated with successful second
language learning. These findings have tended to be substantiated
in the present study. However, frequency and type of participation,
as well as teacher instructional strategies of solicitation and re-
inforcement also appear to be related to success. Some evidence
suggests that actual student verbalization may compensate for a
deficiency of positive personal attributes. This finding would tend
to suggest that greater opportunity to verbalize might promote
success in second language learning for some students.

Voix et Images de France, more than most other second language
programs, is concerned with the primacy of the verbal aspect of
instruction to produce language competence. The transpositional

phase, as conceived by its authors, consists of two major parts:
one concerned primarily with linguistic manipulation, and the other
concerned with the communicative usage of the language by the
students. Although all four teachers in the study had a minimum of
five years of experience in teaching VIF, three of them were found
to spend the majority of the time engaged in instructional
activities concerned with the manipulation of linguistic con-
structs when interacting with their students. Yet according to
the correlations calculated, manipulative student verbalization was
not related to achievement to the same extent as divergent, or less
teacher-controlled and more creative student verbalization. Providing
the students with greater opportunity to participate verbally,
especially in a more communicative fashion, might result in superior
achievement.

Given the conditions of traditional second language in-
structional settings in which one teacher is responsible for anywhere
from eighteen to thirty students, certain procedural limitations
to instruction exist. Rather than conducting verbal activities in
large group settings in which all students are included, perhaps
grouping might prove more beneficial for students. Since some
evidence suggests that the smaller the class, the more probable the
actual verbalization of each student, grouping the students into
smaller units would provide greater opportunity for individual par-
ticipation. Furthermore, the teacher might thus be more cognizant
of the needs and attributes of each individual student. This aware-
ness of student differences by the teacher might permit him to

tailor the instructional activities to suit the needs of the individual student.

Language manipulation typefied by structural drills could probably be executed in a language laboratory or by means of other instructional technology, thereby freeing the teacher to work with individual students. An instructional medium such as a language laboratory has the advantage of engaging all students in the learning process at all times thereby increasing the frequency of actual content interaction. Moreover, the proper use of instructional media permits a certain amount of individualization whereby each student can work on language drills which he requires rather than those designed for the entire class. By judiciously integrating educational technology into learning sequences, the teacher and the students could use their human contact to better avail, i.e., more communication than manipulation.

The Teacher

This study has provided evidence to suggest that all teachers do not implement a given curriculum program in the same way even though the methodology purports to give explicit directions for its use. This finding might be viewed as encouraging since it indicates that the teachers tended to interact with their students according to the type of verbalization produced by the students.

Providing the teacher with feedback about the effect of his pedagogical strategies on both individuals and groups of students could indicate to him the substantial influence which his behavior exerts over student verbalization. The amount and type of verbal-

ization which each student produces appears to be an area which would be especially important to the teacher. The value of an observational instrument such as the L2 System for the teacher appears to be its ability to identify with some degree of precision the verbal interaction between him and individual students. By isolating specific instructional procedures and their impact on the students (information provided by the L2 System), the teacher would have at his disposal the means with which to improve the quality of instruction provided to the learners.

The results of the study suggest that the teaching-learning process requires considerable study beyond knowledge of a given instructional methodology. While all four teachers were experienced and able to adjust their instructional activities to meet the needs of individual students to a certain extent, disparities in the students' opportunity to participate were found for all teachers indicating that the teachers may have been unaware of these differ- ential interactive episodes. Not only does the teacher require in- formation about his strategic effects on students, but also the extent to which he actually permits students to participate verbally. Since participation appeared to be related to achievement in a positive manner, manipulating student participation to compensate for inequalities in student attributes of aptitude and attitude might provide the teacher with a means to equalize somewhat the learn- ing opportunities of individual students. By becoming aware of individual students as separate entities with unique combinations of attributes, a teacher might be able to produce speakers of the second

language in a more efficient manner.

Needless to say, the above would require extensive training and feedback mechanisms to practising teachers. Since several studies have indicated the possibility of training teachers to modify their behavioral patterns to reflect their own perceived goals of instruction, extending the behavioral change to include different dimensions and individual student monitoring appears to be a distinct possibility. Furthermore, the use of student trait inventories, i.e., aptitude and attitude, which are readily available commercially, could assist the teacher in accommodating individual student differences since he would have a means of diagnosing individual differences in addition to that provided by pertinent information derived observationally.

Observational Research

This study has tended to deviate from standard research procedures to a certain extent by treating observational data as frequency measures for individual students. Although this procedure has violated some of the assumptions generally associated with interval data, the results of the study suggest that such analysis appears to be fruitful under certain circumstances.

The finding that individual students do not in effect share a common educational experience tends to dispel some of the assumptions about teacher-student verbal interaction postulated by the proponents of group-based observational research conducted in classrooms. Since individual students received differential opportunities to participate verbally as well as heterogeneous amounts of

teacher solicitation and reinforcement, the assumption that all students are recipients of teacher instructional strategies to the same extent appears to be questioned. Moreover, the assumption that teacher behavior over a period of time remains relatively stable was supported in the present study only as long as global examination occurred. The correlations which were calculated between observational and criterion variables indicated that the effect of instructional strategies on learner outcomes do not necessarily persist over time. Furthermore, the results of the investigation suggest that classroom verbal interaction is primarily a succession of dyadic interactions between the teacher and individual students. Since the present study is an exploratory attempt to describe and analyze the multidimensional nature of teacher-student verbal interaction, the results must be viewed as a first step. Further research will determine whether or not the assumptions on which the study is based are as valid as those held by the more traditional approach toward observational research.

If the major assumption held in the present study, namely that individual student verbalization data can be tabulated and subsequently analyzed to produce meaningful results is valid, then it would appear to follow that greater delving into the instructional process might produce more explicit information about the instructional process. Providing greater detail about the relationship between observational variables and student criterion measures for individuals appears to be a productive means of identifying individual student differences.

The constraints of time and resources available to most independent researchers may preclude wide replication of the present

study. However, groups of researchers might undertake similar studies not only in the area of second language instruction, but perhaps in others as well, in which the detail of analysis becomes the major factor under consideration.

SUGGESTIONS FOR FURTHER RESEARCH

This study has reported only a fraction of the available results. Further analyses of the present data which appear warranted include analysis of the combinatory associations of the categorizations, examination of individual student results, grouping on observational and criterion measures, and employing other analytical procedures.

A longitudinal study in which teachers' behavior was examined over an entire semester might yield a series of observational variables which are consistently related to learner outcomes. Correlations based on relationships between observational and criterion measures which occurred only intermittently could be eliminated from further analysis.

The present study might be replicated using a different sample of teachers, materials, and levels of instruction. Such analysis would serve to identify instructional procedures which are context-dependent and those which vary according to the sample. Additionally, such replication could provide base line data about the frequency distributions among the categories of the L2 System.

A program which could be used to instruct teachers in the effect of their pedagogical strategies on individual students should be developed. Such a program could serve to train teachers to monitor

their evolving instructional strategies. Experimental studies could then determine the value of this type of instruction.

The observation of students in alternative programs appears to be another area of research which might provide further information about the teaching-learning process and the category system. Examination of verbal interaction in bilingual and immersion school settings, individualized and small group settings, and media-aided programs appears to be another area for further research.

CONCLUDING STATEMENT

This study has attempted to provide some indication of the multidimensional nature of teacher-student dyadic verbal interaction in second language classrooms in order to preserve as much as possible the complexity of the teaching-learning process. By synthesizing appropriate dimensions from observational instruments developed for other instructional settings, the L2 System has integrated some of the approaches taken to observational research. The focus on the relationship between observational data and criterion measures for the individual student has made provision for detailed analysis of individual student differences. While the results of the study are based on a small sample of teachers and their students, the detail permitted about the instructional process may provide a possible precedent for future interactive studies. If enough independent studies which employed a similar format and produced parallel results were undertaken, the cumulative body of research might yield analytical procedures in which individual student verbalization is treated as regular interval data.

Undoubtedly further analysis will provide alternative methods of examining individual verbalization data. Should the present study in any way influence the pursuit of future research in which accommodations are made with respect to both the complexity of the instructional process and the individual student, its undertaking will have been justified.

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APPENDICES

APPENDIX   A

RESULTS OF THE PILOT STUDY

Table 79

Per Cent Distribution of CONTENT for Teachers and
Students During the Sketch and the Mechanism

| CONTENT | Teachers | | | | Students | | | |
| | Pilot 1 | | Pilot 2 | | Pilot 1 | | Pilot 2 | |
	S	M	S	M	S	M	S	M
0. No Content	18.6	24.5	20.5	24.4	4.3	4.1	3.8	3.5
1. Phonology	1.4	.4	1.2	.2	1.5	.4	1.3	.2
2. Morphology	5.2	7.5	4.6	8.2	5.3	6.3	4.9	8.2
3. Syntax	10.5	22.9	11.3	23.0	11.2	19.3	12.6	23.8
4. Vocabulary	29.2	24.8	25.9	23.0	20.6	13.5	21.5	16.2
5. Discussion	33.8	18.4	35.4	19.8	55.5	54.7	54.7	46.4
6. Commentary	1.2	1.5	1.2	1.4	1.5	1.7	1.4	1.7

Table 80

Per Cent Distribution of THOUGHT for Teachers and Students
During the Sketch and the Mechanism

THOUGHT	Teachers								Students							
	Pilot 1		Pilot 2						Pilot 1				Pilot 2			
	S	M	S	M					S	M			S	M		
0. No Thought	18.8	24.4	20.4	24.4					3.9	3.7			3.4	3.2		
1. Knowledge	52.6	66.0	55.4	65.5					43.6	48.7			50.7	57.2		
2. Comprehension	22.9	7.4	20.4	6.8					12.2	3.4			16.3	5.6		
3. Application	5.5	1.8	3.5	2.7					28.8	34.4			22.1	24.5		
4. H. M. P.	.2	.3	.3	.6					11.6	9.8			7.5	9.4		

Table 81

Per Cent Distribution of VERBAL FUNCTIONS for Teachers
and Students During the Sketch and the Mechanism

	VERBAL FUNCTIONS	Teachers			
		Pilot 1		Pilot 2	
		S	M	S	M
1	Feelings	.1	.1	.1	.2
2	Praise	10.8	13.5	12.6	16.0
2r		7.3	6.3	7.3	5.5
3		7.0	6.5	7.1	8.2
3c	Use of Ideas	2.2	.8	2.6	1.8
3x		1.9	1.5	1.7	1.0
4		26.7	23.1	21.4	21.2
4d	Questions	.1	.1	.2	.0
4p		7.2	5.6	9.2	5.9
5		18.9	20.1	19.4	17.0
5b	Information	.8	.4	.9	.2
5c		8.0	8.3	8.4	9.4
5p		1.0	.9	.8	.5
6	Directions	5.9	9.7	5.7	9.2
6b		1.1	1.8	1.3	2.4
7	Criticism	1.0	1.3	1.7	1.3
7b		.0	.1	.0	.2

		Students			
		Pilot 1		Pilot 2	
		S	M	S	M
8	Convergent	55.7	47.2	62.7	56.4
8q		2.0	3.8	1.3	4.4
9		38.4	42.2	30.9	30.7
9q	Divergent	2.4	5.8	3.7	7.5
9c		.3	.3	.6	.4
9e		1.2	.7	.8	.6

Table 82

Means and Standard Deviations of the Frequencies of Selected Variables of Participation, Solicitation, and Reinforcement during the Sketch and the Mechanism for Pilot 1 (N=25)

Participation

Variable	Sketch X̄	s	Mechanism X̄	s
CONTENT				
Structure	8.32	5.69	14.16	9.74
Vocabulary	9.96	7.34	7.48	4.35
Discussion	27.84	10.04	30.20	11.48
THOUGHT				
No Thought	1.92	2.24	2.04	2.13
Know. & Comp.	27.60	16.26	28.76	15.14
App. & EMP.	20.24	8.00	24.40	10.11
VERBAL FUNCTIONS				
Convergent	28.52	15.84	28.12	14.31
Divergent	21.24	8.17	27.08	11.44
Total	49.76	21.23	55.20	22.41

Solicitation

Variable	Sketch X̄	s	Mechanism X̄	s
Struct.	7.24	5.29	12.00	8.34
Vocab.	7.76	5.89	5.96	3.14
Disc.	8.48	4.95	4.72	3.18
No T.	4.52	2.46	4.88	2.60
K. & C.	22.84	13.37	23.28	11.99
A. & H.	1.92	3.46	.32	.68
3's	2.40	2.33	2.36	1.89
4's	11.76	6.96	9.96	5.50
5+5c	10.76	6.78	10.64	6.60
6	3.40	2.10	4.48	2.76

Reinforcement

Variable	Sketch X̄	s	Mechanism X̄	s
Struct.	6.64	4.30	11.40	7.73
Vocab.	7.40	5.99	4.72	2.96
Disc.	6.68	4.24	3.16	2.27
No T.	8.60	4.79	10.32	5.11
K. & C.	20.36	12.02	19.56	10.33
A. & H.	1.44	1.92	.28	.45
2's	12.68	6.89	12.80	5.93
3's	3.96	3.23	3.16	2.11
4's	1.60	1.52	2.04	1.56
5+5c	10.28	6.19	10.20	6.58
6	.96	1.22	.84	1.29

Table 83

Means and Standard Deviations of the Frequencies of Selected Variables of Participation, Solicitation, and Reinforcement during the Sketch and the Mechanism for Pilot 2 (N=21)

Variable	Participation Sketch $\bar{X}$	s	Mechanism $\bar{X}$	s		Solicitation Sketch $\bar{X}$	s	Mechanism $\bar{X}$	s		Reinforcement Sketch $\bar{X}$	s	Mechanism $\bar{X}$	s
CONTENT														
Structure	10.52	6.15	21.10	11.28	Struct.	9.24	5.64	16.95	8.76	Struct.	8.43	5.04	14.57	7.10
Vocabulary	12.81	8.73	10.67	7.37	Vocab.	11.05	7.36	9.19	6.60	Vocab.	9.43	6.96	6.67	4.52
Discussion	33.10	11.79	30.57	12.43	Disc.	12.38	8.52	6.76	4.48	Disc.	8.81	6.49	4.29	2.68
THOUGHT														
No Thought	1.95	2.38	2.10	3.34	No T.	4.48	1.82	5.43	2.22	No T.	12.52	6.57	15.05	7.91
Know. & Comp.	40.29	22.83	41.38	18.88	K. & C.	32.67	19.04	32.67	16.03	K. & C.	27.00	16.28	25.38	11.22
App. & HMP.	18.00	9.50	22.43	9.42	A. & H.	1.29	1.69	1.24	1.54	A. & H.	1.19	1.26	.62	1.36
VERBAL FUNCTIONS														
Convergent	38.38	21.46	40.00	18.72	3's	4.10	4.15	4.10	8.67	2's	17.10	8.99	18.00	9.64
Divergent	21.86	11.81	25.90	11.04	4's	16.05	10.28	15.24	6.33	3's	6.05	5.64	5.29	3.77
Total	60.24	30.55	65.90	27.26	5+5c	12.62	7.32	12.81	3.19	4's	2.33	2.01	2.24	1.92
					6	3.72	1.67	5.57	7.10	5+5c	12.86	7.23	13.00	6.36
										6	.62	.79	1.24	1.02

Table 84

Means and Standard Deviations of the Student
Criterion Measures for Pilot 1

Criterion	N	$\overline{X}$	s
Aptitude	25	112.88	10.65
Attitude	25	106.40	12.60
Sketch-Pre-test	24	41.08	9.27
Sketch-Post-test	24	60.71	8.85
Mechanism	21	59.38	5.72

Table 85

Means and Standard Deviations of the Student
Criterion Measures for Pilot 2

Criterion	N	$\overline{X}$	s
Aptitude	20	112.50	14.87
Attitude	21	97.52	14.55
Sketch-Pre-test	16	45.75	10.44
Sketch-Post-test	19	64.89	10.28
Mechanism	18	59.78	12.76

Table 86

Pearson Product-Moment Correlation Coefficients Between the Criterion Measures and Selected Variables of
Participation, Solicitation, and Reinforcement During the Sketch and the Mechanism for Pilot 1

	Aptitude		Attitude		Achievement		
	Sketch	Mechanism	Sketch	Mechanism	Sketch		Mechanism
					Pre	Post	Post
Participation							
CONTENT							
Structure	.10	-.21	-.01	.04	.36	.10	.09
Vocabulary	-.26	.04	.03	.04	.26	-.02	.37
Discussion	-.39	-.32	.20	.05	.18	.20	-.08
THOUGHT							
No Thought	-.23	.15	-.31	.09	-.10	-.66**	.39
Know. & Comp.	-.14	-.20	.00	.04	.36	.12	.17
App. & HMP.	-.44*	-.31	.24	.04	.10	.11	-.12
VERBAL FUNCTIONS							
Convergent	-.15	-.17	.01	.04	.44*	.19	.20
Divergent	-.48*	-.29	.13	.06	-.06	-.25	-.04
Total	-.29	-.26	.06	.05	.30	.06	.12
Solicitation							
CONTENT							
Structure	.16	-.13	-.03	.15	.29	.03	.11
Vocabulary	-.20	.04	.10	.02	.28	.01	.37
Discussion	-.19	-.14	-.04	-.26	.39	.15	.17
THOUGHT							
No Thought	-.30	-.21	-.20	.20	.03	-.14	.04
Know. & Comp.	-.10	-.16	.00	.03	.33	.01	.18
App. & HMP.	-.15	-.06	-.00	-.17	.38	.34	.25
VERBAL FUNCTIONS							
Use of Ideas	-.30	-.11	-.10	-.13	.37	.18	.09
Questions	-.24	.01	.04	.08	.49**	.25	.36
Info. & Corr.	-.01	-.24	-.04	.03	.19	-.16	-.00
Directions	-.00	-.28	.12	.01	.12	-.08	.10
Reinforcement							
CONTENT							
Structure	.17	-.24	-.02	.18	.40*	.13	.04
Vocabulary	-.28	.07	.14	-.03	.21	-.16	.11
Discussion	-.14	-.11	-.18	-.26	.04	-.09	.09
THOUGHT							
No Thought	-.13	-.10	-.09	.13	.58**	.39	.32
Know. & Comp.	-.14	-.21	-.00	.06	.27	-.07	.07
App. & IMP.	-.24	-.13	-.04	-.16	.25	.17	-.05
VERBAL FUNCTIONS							
Praise	-.19	-.10	-.01	.24	.55**	.39	.32
Use of Ideas	-.13	-.10	-.27	-.32	.10	-.27	-.12
Questions	-.05	.15	-.04	.08	.31	-.21	.20
Info. & Corr.	-.13	-.29	.02	.01	.26	.01	.00
Directions	.15	.08	.10	.19	.17	-.13	.30

*p ≤ .05; ** p ≤ .01. Refer to Table 84 for the N's for each criterion measure.

Table 87

Pearson Product-Moment Correlation Coefficients Between the Criterion Measures and Selected Variables of Participation, Solicitation, and Reinforcement During the Sketch and the Mechanism for Pilot 2

	Aptitude		Attitude		Achievement		
	Sketch	Mechanism	Sketch	Mechanism	Sketch		Mechanism
					Pre	Post	Post
Participation							
CONTENT							
Structure	-.10	.18	-.02	.15	.23	.05	.59**
Vocabulary	.02	.21	.06	.18	.27	.10	.49*
Discussion	.01	.20	.05	.18	.62**	.29	.70**
THOUGHT							
No Thought	-.17	.22	-.13	.23	-.02	.04	.42
Know. & Comp.	-.04	.25	.08	.15	.42	.17	.67**
App. & HMP.	.08	.15	-.07	.21	.55*	.25	.67**
VERBAL FUNCTIONS							
Convergent	-.07	.25	.08	.17	.42	.19	.67**
Divergent	.07	.20	-.08	.22	.50*	.19	.68**
Total	-.02	.25	.02	.21	.49*	.21	.74**
Solicitation							
CONTENT							
Structure	-.15	.19	.07	.22	.21	.03	.67**
Vocabulary	-.03	.29	.06	.24	.25	.13	.53*
Discussion	-.06	.32	.07	.28	.47	.20	.59**
THOUGHT							
No Thought	.31	.00	.05	-.12	.46	.24	.48*
Know. & Comp.	-.08	.26	.07	.25	.37	.15	.73**
App. & HMP.	-.07	.55	-.17	.37	.12	-.04	.43
VERBAL FUNCTIONS							
Use of Ideas	-.09	.32	-.09	.23	.27	-.01	.47*
Questions	.11	.30	.15	.25	.49*	.35	.76**
Info. & Corr.	-.21	.05	.06	.11	.26	-.00	.51*
Directions	-.02	.32	-.02	.32	.16	.16	.58**
Reinforcement							
CONTENT							
Structure	-.14	-.04	.07	.03	.21	.04	.58**
Vocabulary	.02	.25	.10	.13	.21	.10	.42
Discussion	-.10	.24	.05	.02	.33	.03	.57**
THOUGHT							
No Thought	-.01	.35	.01	.38	.50*	.29	.64**
Know. & Comp.	-.08	.09	.08	.03	.30	.09	.64**
App. & HMP.	.02	.35	-.09	.32	.12	-.15	.33
VERBAL FUNCTIONS							
Praise	.04	.32	.18	.40	.50*	.33	.67**
Use of Ideas	.04	.22	.04	.06	.37	.12	.51**
Questions	-.00	-.02	-.14	-.12	-.04	-.01	.20
Info. & Corr.	-.28	-.08	-.04	-.09	.21	-.10	.41
Directions	.15	.37	-.03	.39	-.02	-.18	.46

*p $\leq$ .05; ** p $\leq$ .01. Refer to Table 85 for the N's for each criterion measure.

APPENDIX B

FRENCH ATTITUDE SURVEY

FOR YOUR INFORMATION

The information obtained from this survey will be used for research purposes. It should contribute to the body of knowledge about attitudes held by students studying French as a second language. We would appreciate your answering each question as honestly and as carefully as you can.

Although we ask that you identify yourself and your school, this information will remain confidential. Neither you nor your school will be identified by name in the research report. This survey is not a test and will not influence your French mark in any way.

You should be able to complete the task in about twenty minutes. All necessary materials will be provided to you by the person administering the questionnaire.

Please accept our thanks in advance for your cooperation.

FRENCH ATTITUDE SURVEY

In order to complete the survey you will require this question booklet, an answer sheet, a general information sheet, and an HB pencil. Do not write in the question booklet. All questions are to be answered on the answer sheet provided and on the GENERAL INFORMATION SHEET. If you wish to change an answer make sure that you erase your first mark completely.

The statements in Part A are ones with which many people agree, and many people disagree. There are no right or wrong answers since many people have different opinions. Please indicate your agreement or disagreement with each statement by blackening the appropriate letter from the following scale which best describes your feelings:

    A. Strongly disagree
    B. Disagree
    C. Neither agree nor disagree
    D. Agree
    E. Strongly agree

For example: My favourite TV program is The Waltons.

In answering this question, you should have blackened one of the above alternatives. Some people would strongly agree, others would strongly disagree, and still others would choose one of the other alternatives. The one you chose should indicate your feelings about the statement. Note, there is no right or wrong answer. All that is important is that you indicate your personal feeling.

For each of the items on the following pages, we want you to give your immediate reactions. Don't waste time thinking about each statement. Please do not be careless as we wish to determine your true feelings.

Part A

1. Studying French can be important for me because it will someday be useful in getting a good job.

2. I wish I could speak another language perfectly.

3. Even though Canada is relatively far from countries where other languages are spoken, it is important for Canadians to learn other languages.

4. I think that learning French is dull.

5. The more I get to know the French Canadians, the more I want to be fluent in their language.

6. English Canadians should make a greater effort to learn the French language.

7. Studying French can be important for me because it will allow me to meet and converse with more and varied people.

8. My parents really encourage me to study French.

9. I plan to learn as much French as possible.

10. Studying French can be important for me because it will allow me to be more at ease with fellow Canadians who speak French.

11. I love learning French.

12. Studying French can be important for me because it will enable me to better understand and appreciate French Canadian art and literature.

13. Studying French can be important for me because other people will respect me more if I have a knowledge of a second language.

14. My parents have stressed the importance French will have for me when I leave school.

15. I would rather spend my time on subjects other than French.

16. I want to read the literature of a second language in the original.

17. Learning French is a waste of time.

18. Studying French can be important for me only because I'll need it for my future career.

19. Learning French is really great.

20. If Canada should lose the French culture of Quebec, it would indeed be a great loss.

21. Studying a second language is an enjoyable experience.

22. When I leave school I shall give up the study of French entirely beacuse I am not interested in it.

23. Studying French can be important for me because it will make me a more knowledgeable person.

24. I hate French.

25. Studying French can be important for me because I will be able to participate more freely in the activities of other cultural groups.

26. My parents try to help with my French.

27. French is an important part of the school program.

28. I would really like to learn a lot of other languages.

29. My parents feel that because we live in Canada, I should learn French.

30. I really enjoy learning French.

Part B

       Please answer each of the following items by blackening the appropriate alternative which appears to be the most applicable to you. We would like to remind you that your individual answers will be used strictly for research purposes and will in no way affect your mark in French. We would urge you to be as accurate as possible since the success of this investigation depends upon it.

31. If I had the opportunity and knew enough French, I would read French magazines and newspapers:

     a) as often as I could.
     b) not very often.
     c) never.

32. If I had the opportunity to speak French outside of school, I would:

     a) never speak it.
     b) speak it occasionally, using English whenever possible.
     c) speak French most of the time, using English only if really necessary.

33. When I am in French class, I:

   a) never say anything.
   b) answer only the easier questions.
   c) volunteer answers as much as possible.

34. After I get my French assignments back, I:

   a) just throw them in my desk and forget them.
   b) always rewrite them, correcting my mistakes.
   c) look them over, but don't bother correcting mistakes.

35. I actively think about what I have learned in my French classes:

   a) hardly ever.
   b) once in awhile.
   c) very frequently.

36. During French class, I would like:

   a) to have only French spoken.
   b) to have a combination of French and English spoken.
   c) to have as much English as possible spoken.

37. If I had the opportunity to see a French play, I would:

   a) definitely go.
   b) go only if I had nothing else to do.
   *c) not go.
   d) none of these.*(Please explain your answer on the General Information
                                                              Sheet.)

38. Compared to my other courses, I like French:

   a) the most.
   b) least of all.
   c) the same as all the others.

39. There is a French TV station, channel 11, in Edmonton, which I

   a) never watch.
   b) try to watch often.
   c) watch occasionally.

40. If it were up to me whether or not to take French, I:

   a) don't know whether I would take it or not.
   b) would definitely take it.
   c) would drop it.

41. Considering how I study French, I can honestly say that I:

   a) will pass on the basis of sheer luck or intelligence, because I do very little work.
   b) really try to learn French.
   c) do just enough work to get along.

42. If there were French-speaking families in my neighbourhood, I would:

   a) speak French with them as much as possible.
   b) speak French with them sometimes.
   c) speak French with them only if I had to.
   d) never speak French with them.

43. If French were not taught in school, I would:

   a) not bother learning French at all.
   b) try to obtain lessons in French somewhere else.
   c) pick up French in everyday situations (i.e., read French books and newspapers, try to speak it whenever possible, etc. . .)
   **d) none of these. (Please explain your answer on the General Information Sheet.)

44. If my teacher wanted someone to do an extra French assignment, I would:

   a) definitely not volunteer.
   b) only do it if the teacher asked me directly.
   c) definitely volunteer.

45. When it comes to French homework, I:

   a) just skim over it.
   b) put some effort into it, but not as much as I could.
   c) work very carefully, making sure I understand everything.

46. If the opportunity arose and I knew enough French, I would watch French T.V. programs:

   a) never.
   b) sometimes.
   c) as often as possible.

47. When I hear a French song on the radio, I:

   a) change the station.
   b) listen to the music, paying attention only to the easy words.
   c) listen carefully and try to understand all the words.

48. If there were a French Club in my school, I would:

   a) definitely not join.
   b) be most interested in joining.
   c) attend meetings once in a while.

49. I find studying French:

   a) very interesting.
   b) no more interesting than most subjects.
   c) not interesting at all.

50. When I have a problem understanding something we are learning in French class, I:

   a) just forget about it.
   b) immediately ask the teacher for help.
   c) only seek help just before the exam.

NAME_____SCHOOL_____

GENERAL INFORMATION SHEET

*If your answer to statement 37 in Part B was d) none of these, please

explain:_____

**If your answer to statement 43 in Part B was d) none of these, please

explain:_____

1. (a) During the last 12 months have you had the opportunity to use

   French outside of the school situation?

   Yes _____   No _____

   (b) In yes, in what ways and where _____

   _____

   _____

   _____

2. Please indicate all languages that are spoken in your home:

   English_____

   French _____

   German _____

   Ukrainian _____

   Others (please specify)_____

3. Please indicate which language(s) you understand:

   French _____

   German _____

   Ukrainian _____

   Others (please specify)_____

4. Please indicate which language(s) you speak:

   French _____

   German _____

   Ukrainian _____

   Others (please specify)_____

The <u>French Attitude Survey</u> was composed of items derived from the <u>National Test Battery</u> (Gardner and Smythe, 1974).

Part A

Items in <u>Part A</u> of the survey were scored according to a five point Likert scale:

<u>Positive</u>	A	B	C	D	E
	1	2	3	4	5
<u>Negative</u>	A	B	C	D	E
	5	4	3	2	1

The following subtests from the <u>National Test Battery</u> were included and scored:

1.   Integrative Orientation (4 items)

     a) positive   7, 10, 12, 25

2.   Instrumental Orientation (4 items)

     a) positive   1, 13, 18, 23

3.   Attitudes Toward Learning French (10 items)

     a) positive   9, 11, 19, 27, 30
     b) negative   4, 15, 17, 22, 24

Part B

Two subtests were included in <u>Part B</u> and were scored according to the procedure suggested by the authors.

4.   Desire to Learn French (10 items)

Items	A	B	C	D
31	3	2	1	
32	1	2	3	
36	3	2	1	
37	4	3	1	2
38	3	1	2	
40	2	3	1	
42	4	3	2	1
46	1	2	3	
48	1	3	2	
49	3	2	1	

5.   Motivational Intensity (10 items)

33	1	2	3	
34	1	3	2	
35	1	2	3	
39	1	3	2	
41	1	3	2	
43	1	4	3	2
44	1	2	3	
45	1	2	3	
47	1	2	3	
50	1	3	2	

Lesson 17*

Sketch

LA JOURNEE DE MADAME THIBAUT

VOIX: *Jeanne, Madame Thibaut*

[1]** JEANNE: Alors, Madame Thibaut, vous êtes seule.
[2] — Les enfants sont à l'école;
[3] — votre mari est à son bureau.
[4] — Qu'est-ce que vous ferez *ce matin*?***
[5] MME THIBAUT: Comme tous les matins,
[6] — je laverai les tasses du petit déjeuner.
[7] — *Ensuite*,
[8] — je rangerai l'appartement
[9] — et je *nettoierai* la cuisine.
[10] JEANNE: Vous n'avez pas de *femme de ménage*?
[11] MME THIBAUT: Si, elle viendra à dix heures,
[12] — elle fera le ménage dans les chambres
[13] — et elle lavera le linge.
[14] JEANNE: Est-ce que vous sortirez ce matin?
[15] MME THIBAUT: Non, je ne sortirai pas.
[16] — *Vers* onze heures,
[17] — je préparerai le *déjeuner*.
[18] JEANNE: Les enfants déjeuneront avec vous?
[19] MME THIBAUT: Paul déjeunera au *lycée*
[20] — mais Catherine *rentrera à* midi.
[21] — Le *repas* sera prêt
[22] — et nous déjeunerons *ensemble*.
[23] — Mon mari mangera à l'*usine*.
[24] JEANNE: Et *cet après-midi*, qu'est-ce que vous ferez?
[25] MME THIBAUT: Beaucoup de *choses*.
[26] — *D'abord*, je ferai des *courses*.
[27] — Ensuite, je *retrouverai* une amie
[28] — et nous irons au *Musée du Louvre*.
[29] JEANNE: Votre amie est *peintre*?
[30] MME THIBAUT: Oui. Je vais *souvent* avec elle dans les musées.
[31] JEANNE: Et vous avez le temps de faire tout cela?
[32] MME THIBAUT: Mais oui. Et à *cinq* heures,
[33] — quand les enfants rentreront,
[34] — je serai à la maison.
[35] — Je préparerai le repas.
[36] — A huit heures mon mari sera là
[37] — et nous dînerons tous ensemble.
[38] JEANNE: Vous ne sortirez pas *après dîner*?
[39] MME THIBAUT: Non, nous écouterons la *radio*
[40] — *ou* nous *lirons* les *journaux*.
[41] JEANNE: Eh bien! *Bonne journée*, Madame Thibaut.

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*Renard and Heinle, 1969, pp. 269-271.
**Filmstrip frame number.
***New vocabulary.

Mechanism

Mécanisme 1

VOIX: *Alain, Rémi*

[1] ALAIN: Quel beau *dimanche* aujourd'hui!
[2] — Venez vous promener avec moi.
[3] RÉMI: Non, je ne me promène jamais.
[4] ALAIN: Eh bien, allons au cinéma.
[5] RÉMI: Je ne vais pas au cinéma.
[6] ALAIN: Vous *préférez* aller au *café*?
[7] RÉMI: Je n'aime pas aller au café.
[8] ALAIN: Il y aura Marie.
[9] — Vous l'aimez bien?
[10] RÉMI: Je *n'*aime *personne*.
[11] ALAIN: Mais c'est dimanche:
[12] — il faut faire *quelque chose*!
[13] RÉMI: Le dimanche, je ne fais rien.
[14] ALAIN: Alors, allez *dormir!*
[15] — Au revoir!

Mécanisme 2

VOIX: *Odette, Louis*

[16] ODETTE: *Louis*, est-ce que nous irons en *voyage*?
[17] LOUIS: Bien sûr!
[18] ODETTE: Quand?
[19] LOUIS: Je ne sais pas encore.
[20] ODETTE: Et tu m'achèteras une jolie robe?
[21] LOUIS: Mais oui.
[22] ODETTE: Quand?
[23] LOUIS: Je ne sais pas.
[24] ODETTE: Et dis-moi, Louis,
[25] — tu m'emmèneras au *théâtre*, n'est-ce pas?
[26] LOUIS: *Certainement.*
[27] ODETTE: Mais quand?
[28] — Dans une *semaine?*
[29] — Dans un *mois?*
[30] — Ou dans un an?
[31] LOUIS: Oh, tu m'*ennuies!*
[32] — Quand? quand? quand?
[33] ODETTE: Toi aussi, tu m'ennuies.
[34] — Tu *promets* toujours
[35] — et tu ne donnes jamais.

Grammatical Content of Lesson 17*

COMPLÉMENTS CIRCONSTANCIELS DE TEMPS	SUJETS	VERBES
		Toutes les formes négatives
		ne .... plus
		ne .... jamais
		ne .... rien
		ne .... personne
		RÉVISION DES VERBES
		Présent Futur
		Passé Composé
Ce matin		
Tous les matins		
Cet après-midi		
Ce soir		
Etc.		

*Renard and Heinle, 1969, p. 127.

A P P E N D I X   D

ACHIEVEMENT TESTS

SCRIPT FOR TEST TAPE

Oral Production Test for Lesson 17 Sketch, Form A*

This oral production test has been designed to measure how
well you have assimilated the content of the Sketch/Mechanism of
Lesson 17. The test consists of three parts. All instructions for
it will be given to you from this tape.

In this test, you will be able to show how well you speak
French. You will be asked to speak in a variety of ways. As you
speak, your voice will be recorded and your score will be based on
what is said on the tape. It is important therefore, that you
speak loudly enough and clearly enough for the machine to record
what you say. Your signal to speak will always be this tone. BONG
Now check to see that your tape recorder is turned to the "record"
position. <u>10 seconds</u>

You will not need any pencil or paper. You should have in
front of you a test booklet marked Oral Production Test, Lesson 17
Sketch.* Do not open the booklet until you are told to do so. Read
the instructions on the cover carefully. <u>45 seconds</u> If you have
any questions, please raise your hand and ask the test supervisor.
STOP TAPE, CHECK FOR QUESTIONS, ANSWER QUESTIONS.

To begin, please identify your test tape. After you hear
the signal, give your full name, your French class, and your school.
BONG <u>15 seconds</u>

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*Also Lesson 17 Sketch, Form B, and Lesson 17 Mechanism.

2

The first part of the test will consist of five questions which you are asked to answer. For example: to the question

*Monsieur Thibaut est français?

you would answer:

BONG *Oui, il est français.

Here is a practice question. Answer it after you hear the signal.

*Madame Thibaut est canadienne? BONG <u>10 seconds</u>

You should have answered:

*Non, elle est française.

Answer each of the five questions, after you hear the signal. (Five questions are read one after another identified in number by the English speaker, followed by the French question, followed by the bong, followed by 10 seconds of silence.) This is the end of part one.

In the second part of the test, you will see a picture which you will talk about in French. You will have some time to look at the picture before the signal sounds, then you will have time to say a number of things about the picture. Describe what seems to be going on. Do not list all the objects you see. Just tell the story that the picture seems to tell. You may continue speaking until you are told to stop.

Now turn to page 3 of your test booklet and begin talking about the picture when the signal sounds.

<u>30 seconds</u> BONG <u>1 minute</u>

3

Stop. In the last part of the test, you will see a simple story told in several scenes. Look at the pictures and tell a story about them. You may continue speaking until you are told to stop. Now turn to page 5 of your test booklet and begin talking when the signal sounds.

30 seconds BONG 1 minute

Stop. This is the end of the test. Close your booklet and check to see that your tape recorder is at the "stop" position. Wait for further instructions.

QUESTION-ANSWER SECTIONS

Sketch, Form A

1. Madame Thibaut, quand est-ce que vous lisez les journaux?

2. Où est la famille le soir?

3. A quelle heure est-ce qu'on dîne?

4. Toi et ton ami, qu'est-ce que vous ferez cet après-midi?

5. Qu'est-ce que tu as fait ce matin?

Sketch, Form B

1. Monsieur Thibaut, quand est-ce que vous écoutez la radio?

2. Où sont les enfants le matin?

3. A quelle heure est-ce qu'on déjeune?

4. Qu'est-ce que tu feras cet après-midi?

5. Toi et ton ami, qu'est-ce que vous avez fait ce matin?

Mechanism

1. Quand est-ce que Rémi est content?

2. Ici, il y aura quelqu'un à six heures?

3. Louis donne quelque chose à sa femme?

4. Oh, tu dors encore?

5. Quand est-ce que tu iras au cinéma?

MARKING KEY

Question-Answer (45 marks)

Nine marks per question assigned as follows:

3 Phonology
3 Structure
3 Meaning

For every error in each category deduct one mark to a maximum of three. No minus points are given.

Description and Résumé (20 marks each)

Five marks are assigned for each of the following:

5 Vocabulary
5 Structure
5 Organization
5 Fluency

One mark is assigned for evidence of each of the following:

Vocabulary: One-half point for every new noun or verb (max = 5).

Structure: Pronoun substitution, use of modifiers, complex sentence, prepositional phrase, consistency.

Organization: Introduction, logical development, appropriate connectors, style consistency, closing sentence.

Fluency: (1) Inadequate, (2) halting, (3) fair, (4) good, (5) native-like.

# ORAL PRODUCTION TEST

Lesson 17 Sketch

Form A

To the Student

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO. This is a test of your ability to speak French. The content of the test is based on Lesson 17 Sketch. The test consists of three parts. The first part does not appear in this booklet. Instructions for all three parts are given on the test tape.

To get ready for the test, do these three things:

1) Seat yourself so that the microphone is the right distance from your mouth.

2) Check to be sure that your tape recorder is turned to the RECORD position.

3) Put on your headphones, adjust them, and wait for the signal to begin.

1

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3
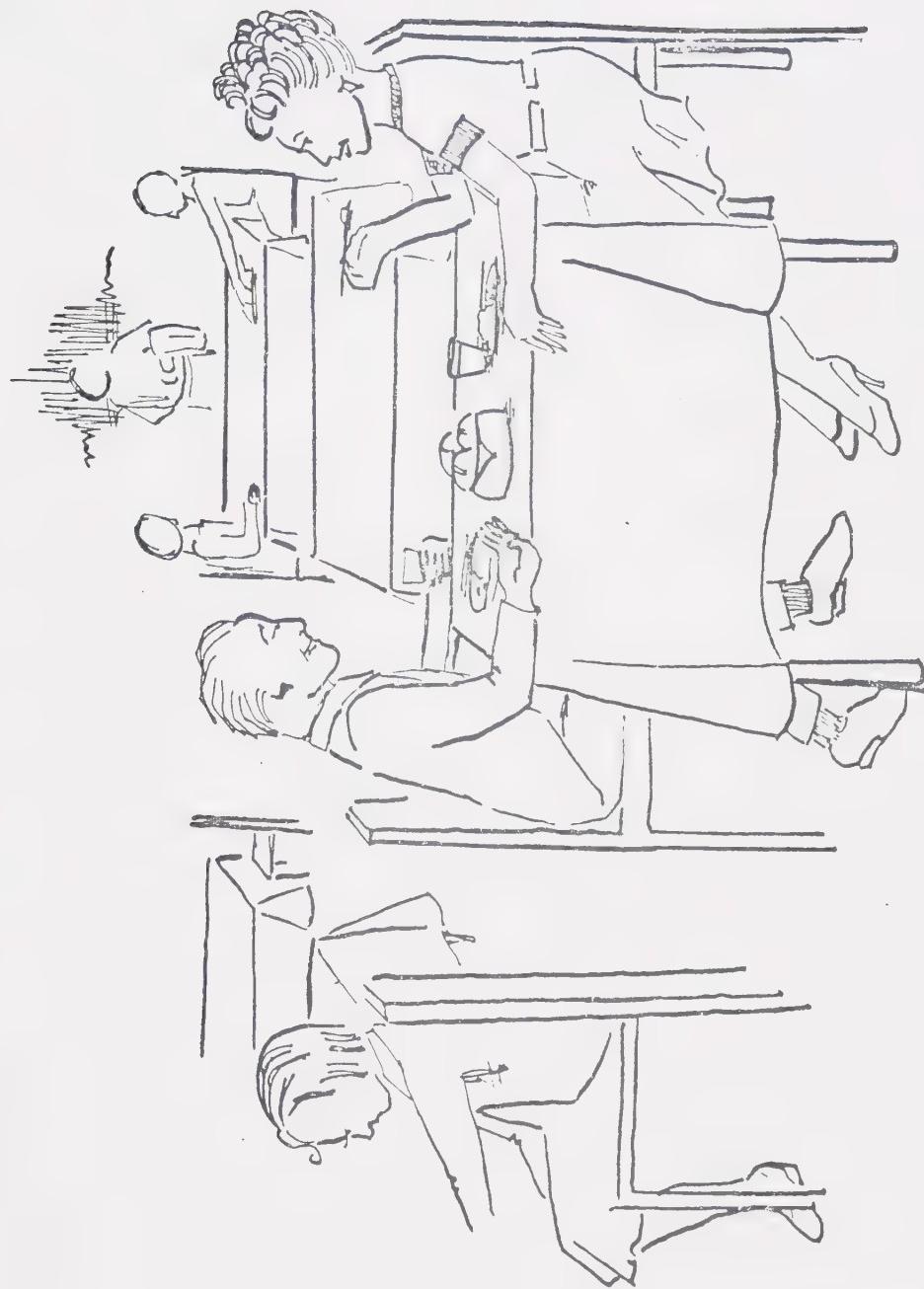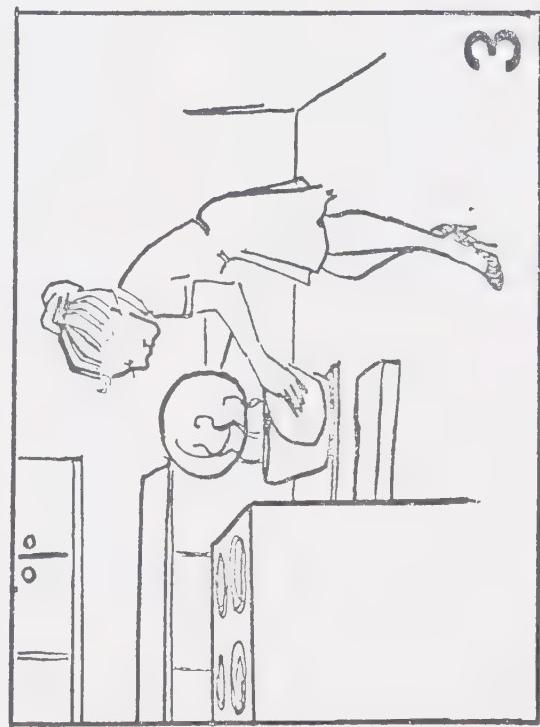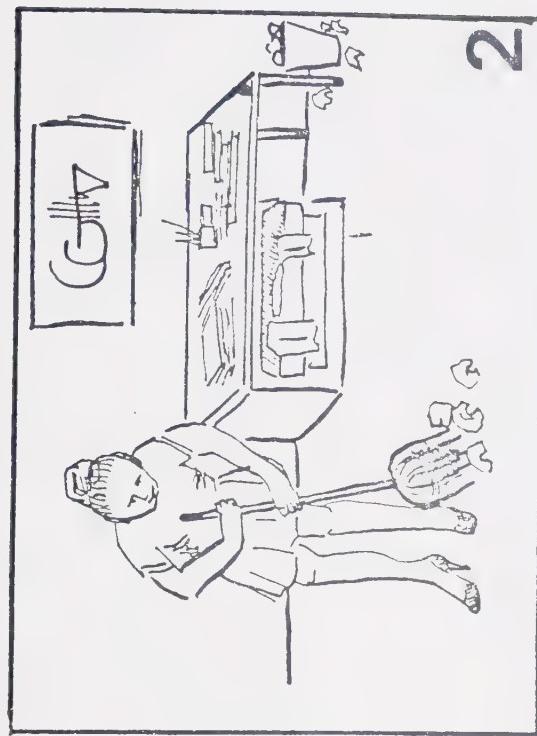
ORAL PRODUCTION TEST

Lesson 17 Sketch

Form B

To the Student

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
This is a test of your ability to speak French. The content of the test is based
on Lesson 17 Sketch. The test consists of three parts. The first part does not
appear in this booklet. Instructions for all three parts are given on the test
tape.

To get ready for the test, do these three things:

1) Seat yourself so that the microphone is the right distance
   from your mouth.
2) Check to be sure that your tape recorder is turned to the
   RECORD position.
3) Put on your headphones, adjust them, and wait for the
   signal to begin.

1

3
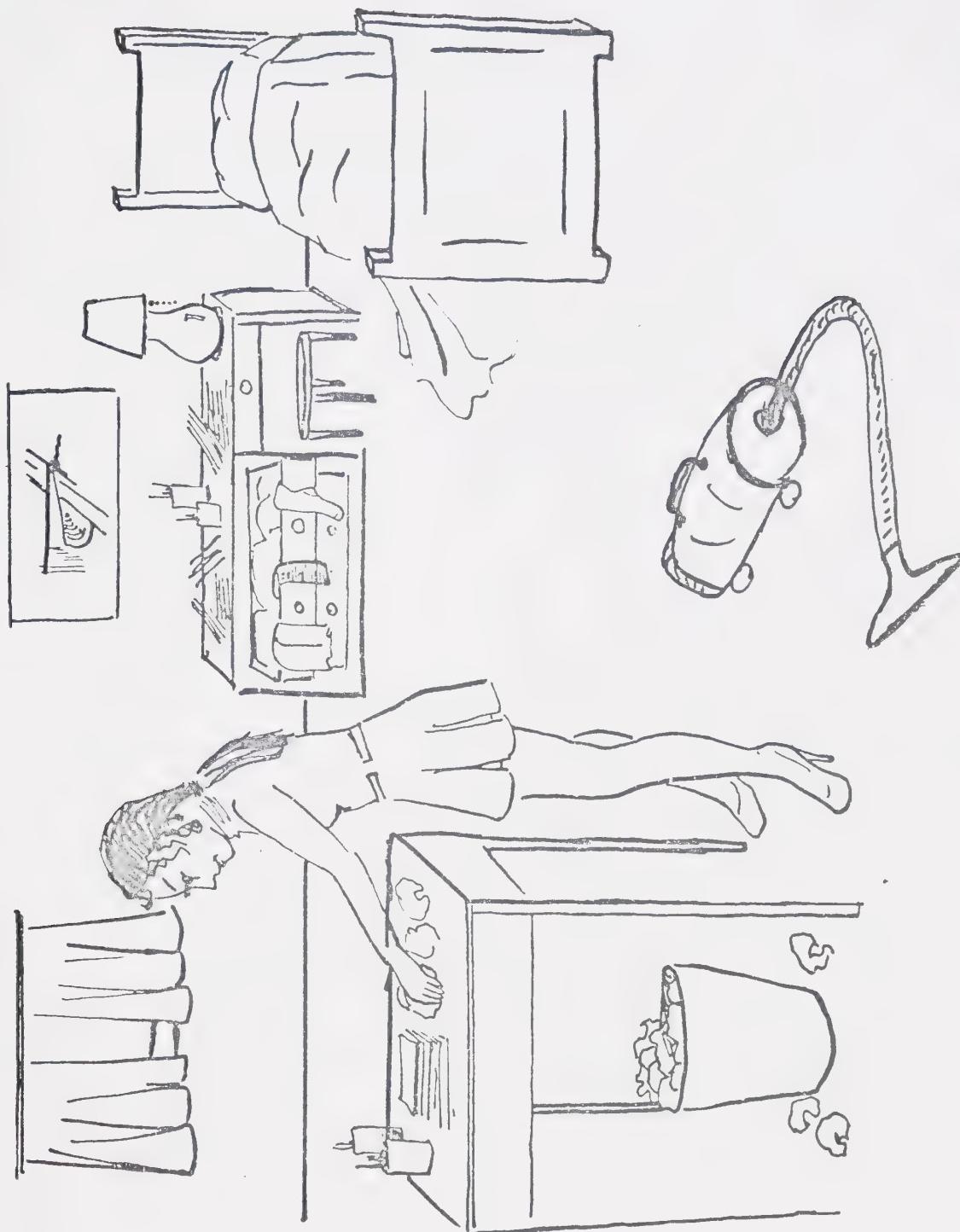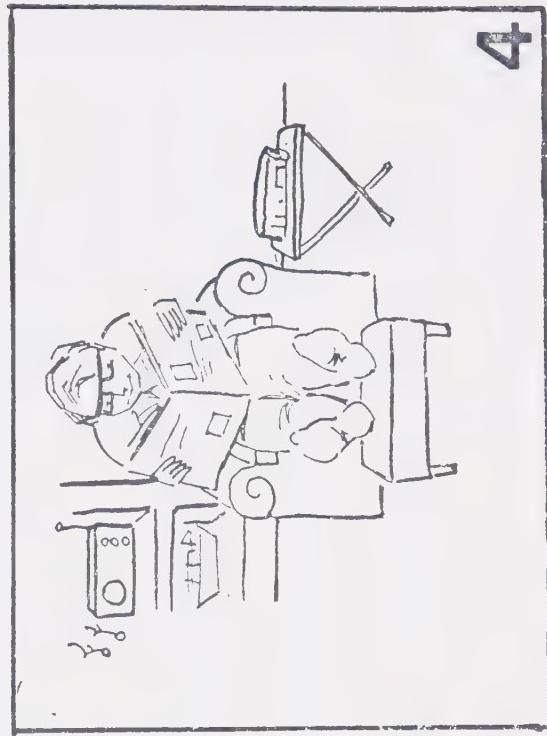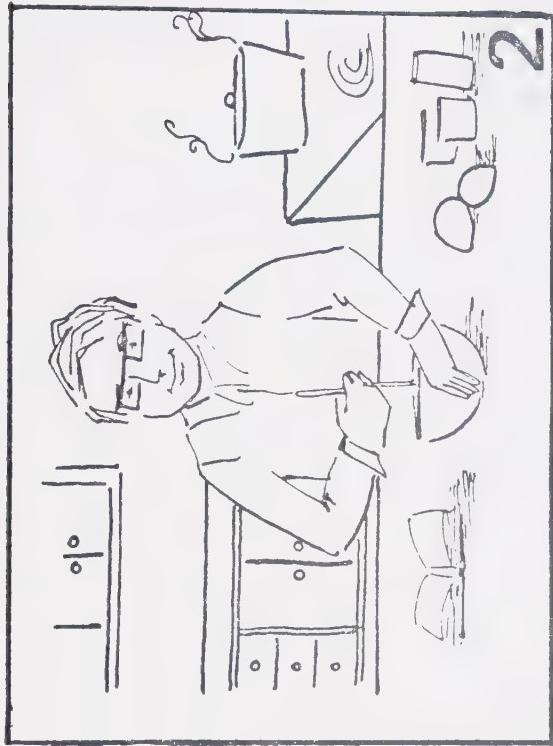
ORAL PRODUCTION TEST

Lesson 17 Mécanismes

To the Student

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO. This is a test of your ability to speak French. The content of the test is based on Lesson 17 Mécanismes. The test consists of three parts. The first part does not appear in this booklet. Instructions for all three parts are given on the test tape.

To get ready for the test, do these three things:

1) Seat yourself so that the microphone is the right distance from your mouth.

2) Check to be sure that your tape recorder is turned to the RECORD position.

3) Put on your headphones, adjust them, and wait for the signal to begin.

3

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